

N8800-047F/073F

NEC Express5800/340Hb-R
User's Guide

1st Edition
3-2005
856-125126-901-A

PROPRIETARY NOTICE AND LIABILITY DISCLAIMER

The information disclosed in this document, including all designs and related materials, is the valuable property of NEC Corporation (NEC) and /or its licensors. NEC and/or its licensors, as appropriate, reserve all patent, copyright and other proprietary rights to this document, including all design, manufacturing, reproduction, use, and sales rights thereto, except to the extent said rights are expressly granted to others.

The NEC product(s) discussed in this document are warranted in accordance with the terms of the Warranty Statement accompanying each product. However, actual performance of each such product is dependent upon factors such as system configuration, customer data, and operator control. Since implementation by customers of each product may vary, the suitability of specific product configurations and applications must be determined by the customer and is not warranted by NEC.

To allow for design and specification improvements, the information in this document is subject to change at any time, without notice. Reproduction of this document or portions thereof without prior written approval of NEC is prohibited.

First Printing, March 2005
Copyright 2005
NEC Corporation
7-1 Shiba 5-Chome, Minato-Ku
Tokyo 108-8001, Japan
All Rights Reserved
Printed in Japan

Keep this User's Guide handy for quick reference when necessary.

SAFETY INDICATIONS

To use NEC Express5800 Series safely, follow the instructions in this User's Guide.

This guide explains components that pose a danger, types of dangers, and actions taken to prevent them; such components are labeled warning.

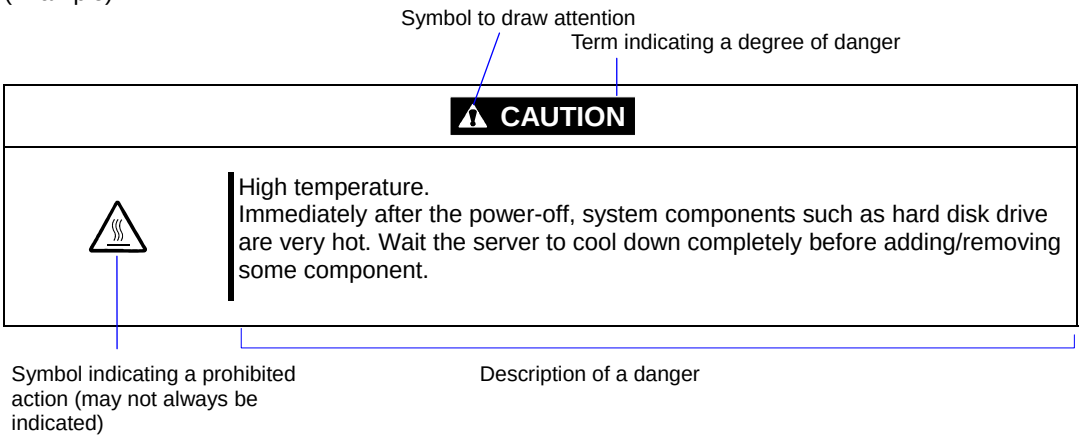
This guide and warning labels use "WARNING" and "CAUTION" to indicate a danger depending on the degree. These terms are defined as follows:

WARNING	Indicates a danger that could lead to a death or serious injury.
CAUTION	Indicates a danger that could lead to a burn, other injuries or damage to physical assets.

This guide uses the following three types of symbols to give indications and precautions against a danger. They are defined as follows:

	Indicates that there is a risk of danger. Each image symbolizes a particular type of danger. (Attention)
	Indicates what you must not do. Each image symbolizes a particular type of prohibition. (Prohibited actions)
	Indicates what you must do. Each image symbolizes a particular type of action necessary to avoid a danger. (Mandatory actions)

(Example)



SYMBOLS USED IN THIS USER'S GUIDE AND WARNING LABELS

Attention

	Indicates a risk of an electric shock.
	Indicates a risk of an injury due to heat.
	Indicates a risk of catching your fingers.
	Indicates a risk of a fire or smoke.
	Indicates a general precaution or warning that is not defined herein.
	Indicates a risk of losing eyesight due to laser beam.
	Indicates a risk of an injury or damage to physical assets due to hazardous material.

Prohibited actions

	Indicates a general prohibition that is not defined herein.
	Do not disassemble, repair, or modify the equipment. There is a risk of an electric shock or fire.

Mandatory actions

	Unplug the server. There is a risk of an electric shock or fire.
	Indicates a general action to take that is not defined herein. Make sure to follow the instructions.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numériqeu de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CE Statement

Warning: This is a Class A product. In residential environment, this product may cause radio interference, in which case the user may be required to take adequate measures (EN55022).

NOTE: This product provides resistance against hardware faults with its redundant hardware modules. However, this does not mean complete fault-tolerance is assured. For example, there is a risk of system down when:

- A fatal fault occurs in software.
- Both modules within a redundant hardware pair break down.
- A fatal fault occurs in a non-redundant component, such as the clock generator circuitry or the interconnect backplane.
- The entire system is cut off from AC power.

Trademarks

NEC EXPRESSBUILDER, NEC ESMPRO, and NEC Express5800/ft series are trademarks of NEC Corporation. Stratus is a registered trademark of Stratus Technologies Bermuda Ltd. Microsoft, Windows, Windows Server, Windows NT, and MS-DOS are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries. Intel and Pentium are registered trademarks of Intel Corporation. Xeon is a trademark of Intel Corporation in the United States. AT is a registered trademark of International Business Machines Corporation in the United States and other countries. Adobe, the Adobe logo, Acrobat, and the Acrobat logo are trademarks of Adobe Systems Incorporated. Datalight is a registered trademark of Datalight, Inc. ROM-DOS is a trademark of Datalight, Inc. DLT and DLTtape are trademarks of Quantum Corporation in the United States. QLogic and its logo are trademarks of QLogic Corporation in the United States. Fast!UTIL is a trademark of QLogic Corporation in the United States.
All other product, brand, or trade names used in this publication are the trademarks or registered trademarks of their respective trademark owners.

Microsoft Windows Server 2003 Standard Edition operating system and Microsoft Windows Server 2003 Enterprise Edition operating system are called Windows Server for short. Microsoft Windows 2000 Server operating system, Microsoft Windows 2000 Advanced Server operating system and Microsoft Windows 2000 Professional operating system are called Windows 2000 for short. Microsoft Windows NT Server network operating system version 3.51/4.0 and Microsoft Windows NT Workstation operating system version 3.51/4.0 are called Windows NT for short. Microsoft Windows Millennium Edition Operating System is called Windows Me for short. Microsoft Windows 98 operating system is called Windows 98 for short. Microsoft Windows 95 operating system is called Windows 95 for short.

Names used with sample applications are all fictitious. They are unrelated to any existing product names, names of organizations, or individual names.

To prevent voltage sag:

This product may be affected by voltage sag caused due to lightning. To prevent voltage sag, you are recommended to use an AC uninterruptible power supply (UPS) unit.

Notes:

(1) No part of this manual may be reproduced in any form without prior written permission of NEC Corporation.
(2) The contents of this manual are subject to change without prior notice.
(3) The contents of this manual shall not be copied or altered without prior written permission of NEC Corporation.
(4) All efforts have been made to ensure the accuracy of all information in this manual. If you find any part unclear, incorrect, or omitted in this manual, contact the sales agent where you purchased this product.
(5) NEC assumes no liability arising from the use of this product, nor any liability for incidental or consequential damage arising from the use of this manual regardless of (4) above.

PREFACE

Welcome to the NEC Express5800/ft series.

NEC Express5800/ft series is a "fault-tolerant (ft)" server focusing on "high reliability" in terms of fault-tolerance, in addition to "high performance," "scalability," and "general versatility" provided by NEC Express5800 series. In the event of trouble, its dual configuration will allow the system to instantaneously isolate the failed parts to assure non-stop running; operation will be moved smoothly from one module to the other, minimizing damage to it. You can use this NEC Express5800/ft series in a mission-critical system where high availability is required. By the use of Windows operating system, it also provides outstanding openness for general-purpose applications, etc.

To make the best use of these features, read this User's Guide thoroughly to understand how to operate NEC Express5800/ft series.

ABOUT THIS USER'S GUIDE

This User's Guide helps a user to properly setup and use the product.

Consult this guide to ensure safety as well as to cope with trouble during a system setup and daily operation.

Keep this manual handy.

This User's Guide is intended for users who have a good knowledge on the basic use of Windows operating systems and general I/O devices such as a keyboard and mouse.

How to Use This User's Guide

This guide consists of eight chapters and appendices. To help you find a solution quickly, the guide contains the following information:

For descriptions on setting up this product, see the separate volume "User's Guide (Setup)".
Read "Precautions for Use" first.
Before going on to main chapters, be sure to read "Precautions for Use." These precautions are very important for using the product safely.

Chapter 1 Precautions for Use
This chapter describes precautions necessary to use the product safely and properly. Be sure to read this chapter before using the product. It also provides information on user support. It will be helpful when you need maintenance service, support, etc.

Chapter 2 General Description
This chapter describes what you should know about the product: its component names, functions, operating procedures as well as handling of devices and other parts.

Chapter 3 Windows Setup and Operation
This chapter describes setup and operation specific to the product when it is on Windows.

Chapter 4 System Configuration
This chapter describes how to make settings of built-in basic input/output system. It also describes factory-shipped parameters.

Chapter 5 Installing and Using Utilities
This chapter describes features and operating procedures of a standard utility "NEC EXPRESSBUILDER." It also describes procedures to install and operate various software programs contained in its CD-ROM.

Chapter 6 Maintenance
This chapter describes maintenance procedures and use of maintenance tools. If you need to move the product for maintenance purposes, follow the steps provided in this chapter.

Chapter 7 Troubleshooting
If the product does not work properly, see this chapter before deciding that it is a breakdown.

Chapter 8 Option
This chapter describes options available for the server, procedures and precautions for replacing the failed devices.

Appendix A Specifications
This appendix lists specifications of the product.

Appendix B IRQ and I/O Port Address
This appendix lists factory-assigned IRQ and I/O port address.

Additional symbols

The following symbols are used throughout this User's Guide in addition to the caution symbols describe at the beginning.

IMPORTANT:	Important points or instructions to keep in mind when using the server or software
CHECK:	Something you need to make sure when using the server of software
TIPS:	Helpful information, something useful to know

Accessories

This product is shipped with various accessories. See the attached list to make sure everything is included and check the individual items. If some component is missing or damaged, contact your sales agent.

- Keep the accessories in a safe place. You will need them when you perform setup, addition of options, or replacement of failed components.
- NEC EXPRESSBUILDER, an accessory of the server, is packaged in a paper envelope. For the components in the package, see the packing list of the NEC EXPRESSBUILDER contained in the paper envelope. If you lose the NEC EXPRESSBUILDER CD-ROM and desire to purchase a new one, contact your sales representative.
- Be sure to fill out and mail the software registration card that is attached to your operating system.
- Make backup copies of included floppy disks, if any. Keep the original disks as the master disks; use these copies in operation.
- Improper use of an included floppy disk or CD-ROM may alter your system environment. If you find something unclear, stop using them and contact your sales agent.

CONTENTS

PREFACE i
ABOUT THIS USER'S GUIDE ii
CONTENTS iv

Chapter 1 Precautions for Use 1-1

WARNING LABELS 1-2
Server Chassis 1-2
CPU Module 1-4
PCI Module 1-5
Expansion PCI Module 1-7
PRECAUTIONS FOR SAFETY 1-9
General 1-9
Use of Power Supply and Power Cord 1-11
Installation, Relocation, Storage and Connection 1-12
Cleaning and Handling of Internal Devices 1-13
During Operation 1-14
Rack-mount Model 1-15
For Proper Operation 1-17
TRANSFER TO THIRD PARTY 1-19
DISPOSAL OF EQUIPMENT AND CONSUMABLES 1-20
IF SYSTEM TROUBLE IS SUSPECTED 1-21
ABOUT REPAIR PARTS 1-21
ABOUT OUR WEB SERVICE 1-21

Chapter 2 General Description 2-1

STANDARD FEATURES 2-2
HOW THE OPERATING SYSTEM SEES THE CPU MODULES 2-6
How CPU modules appear on Device Manager 2-6
How CPU modules appear on Task Manager 2-6
NAMES AND FUNCTIONS OF COMPONENTS 2-7
Front View (with Front Bezel Removed) 2-7
Rear View 2-9
CPU Module 2-11
PCI Module 2-12
CD- ROM Drive 2-13
Expansion PCI Module 2-14
Chassis Board Layout 2-15
LEDs 2-16
BASIC OPERATION 2-28
Installing/Removing the Front Bezel 2-28
Power ON 2-30
Power OFF 2-31

Power-On Self Test (POST) 2-32
Floppy Disk Drive 2-35
CD-ROM Drive 2-38

Chapter 3 Windows Setup and Operation 3-1

DISK OPERATIONS 3-2
Disks Operations Using Disk Management 3-3
Disk Operations Using the RDR (Rapid Disk Resync) Function 3-15
Replacing Failed Hard Disk Drives 3-25
CHANGE DRIVE LETTER 3-33
DUAL LAN CONFIGURATION 3-34
Overview 3-34
Configuring dual LAN 3-34
Removing dual LAN 3-37
CHECK THE DUPLICATING OPERATION OF MODULES 3-40
Evaluate Startup and Stop of PCI Modules 3-40
Evaluate Start and Stop of CPU Modules 3-43
Evaluate Start and Stop of Expansion PCI Modules 3-45
NEC Express5800/ft series SERVICE PROGRAM CONFIGURATION 3-47

Chapter 4 System Configuration 4-1

SYSTEM BIOS ~ SETUP ~ 4-2
Starting SETUP Utility 4-3
Description of On-Screen Items and Key Usage 4-4
Menu and Parameter Descriptions 4-5
SCSI BIOS ~ *Fast!*UTIL ~ 4-21
Setting List for Optional SCSI Device 4-31
RESET AND FORCED SHUTDOWN 4-32
Resetting the Server 4-32
Forced Shutdown 4-32
Clear CMOS / Password (Configuring Motherboard Jumpers) 4-33

Chapter 5 Installing and Using Utilities 5-1

NEC EXPRESSBUILDER 5-2
Start Menu 5-2
NEC EXPRESSBUILDER Top Menu 5-4
Master Control Menu 5-7
NEC ESMPRO Agent AND Manager 5-8
Overview 5-8
NEC ESMPRO Agent 5-16
NEC ESMPRO Manager 5-25
Maintenance of NEC Express5800/ft series 5-46

Chapter 6 Maintenance 6-1

DAILY MAINTENANCE 6-2
Checking Alert 6-2
Checking STATUS LEDs 6-3
Making Backup Copies 6-3
Cleaning 6-4
SYSTEM DIAGNOSTICS (CONSUMER) 6-7
Test Items 6-7
Startup and Exit of System Diagnosis (Consumer) 6-7
OFF-LINE MAINTENANCE UTILITY 6-9
RELOCATING/STORING THE NEC Express5800/ft series 6-10

Chapter 7 Troubleshooting 7-1

TO LOCATE THE ERRORS 7-2
ERROR MESSAGES 7-3
Error Messages by LED Indication 7-3
Windows Server 2003, Enterprise Edition Error Messages 7-4
Server Management Application Error Message 7-5
SOLVING PROBLEMS 7-6
Problems with NEC Express5800/ft series 7-6
Problems with NEC EXPRESSBUILDER 7-19
Problems with Master Control Menu 7-20
Problems with NEC ESMPRO 7-21
COLLECTION OF TROUBLE LOGS 7-29
Collection of Event Logs 7-30
Collection of Configuration Information 7-31
Collection of Diagnostic Information by Dr. Watson 7-31
COLLECTION OF THE MEMORY DUMP 7-32

Chapter 8 Option 8-1

SAFETY PRECAUTIONS 8-2
ANTI-STATIC MEASURES 8-3
PREPARING YOUR SYSTEM FOR UPGRADE 8-4
OPTIONS 8-5
3.5-INCH HARD DISK DRIVE 8-6
Installing 3.5-inch Hard Disk Drive 8-8
Removing 3.5-inch Hard Disk Drive 8-11
Replacing 3.5-inch Hard Disk Drive 8-12
PROCESSOR 8-13
DIMM 8-14
PCI BOARD 8-15
SETUP OF OPTIONAL PCI BOARD 8-16
N8804-001P1 100BASE-TX Adapter Set 8-17
N8803-031F Fibre Channel Controller 8-19
N8104-84 1000BASE-SX Adapter 8-23

N8104-103 1000BASE-T Adapter 8-25
Supplement 8-27

Appendix A Specifications A-1

Appendix B IRQ and I/O Port Address B-1

Interrupt Request B-1
I/O Port Address B-2

(This page is intentionally left blank.)

Chapter 1

Precautions for Use

This chapter includes information necessary for proper and safe operation of the server.

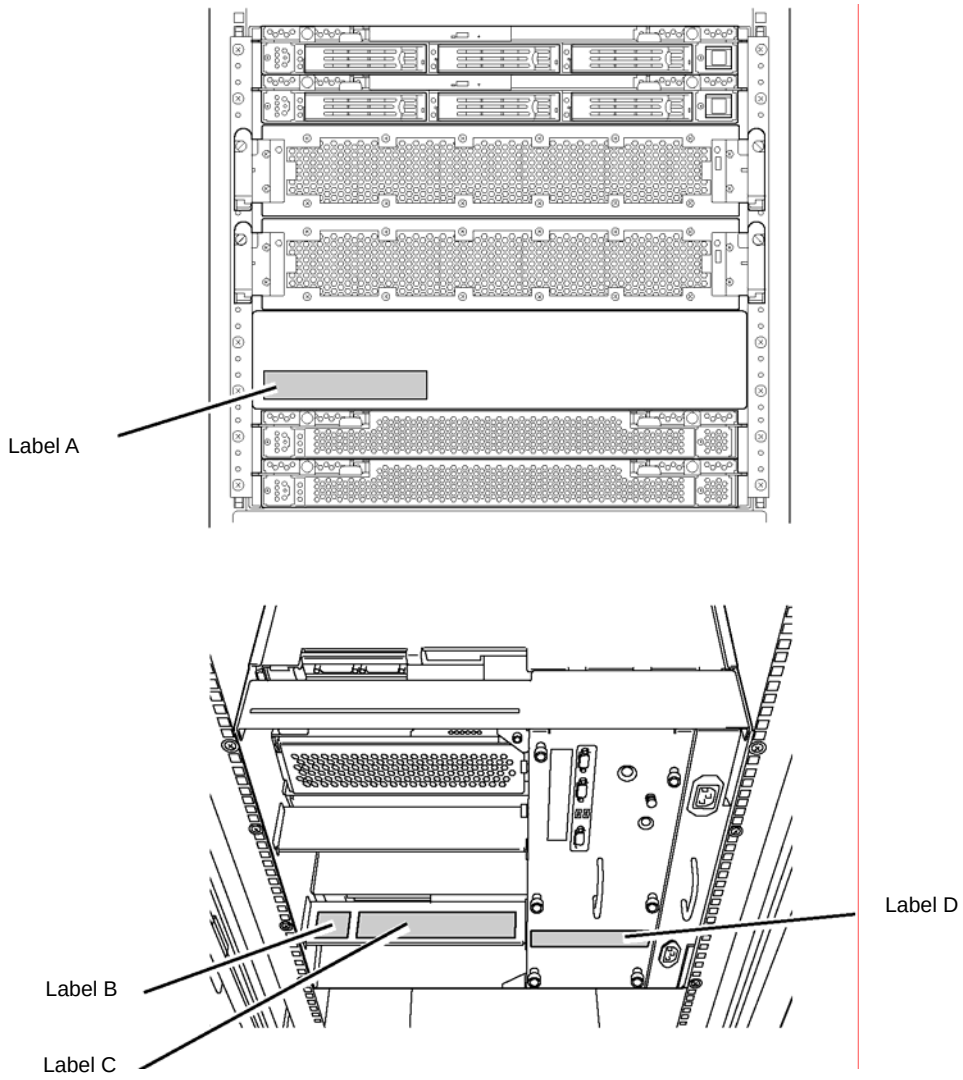
WARNING LABELS

Warning labels are placed in certain parts of the system so that the user stays alert to possible risks (Do not remove or damage these labels).

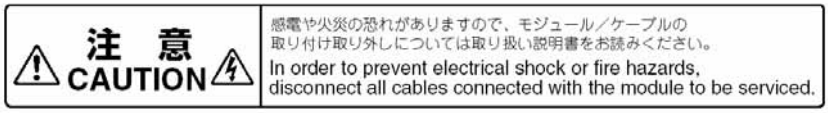
If some label is missing, about to peel off, or illegible, contact your sales agent.

Server Chassis

The figures below show locations of the labels on the server chassis.



Label A



Label B



Label C

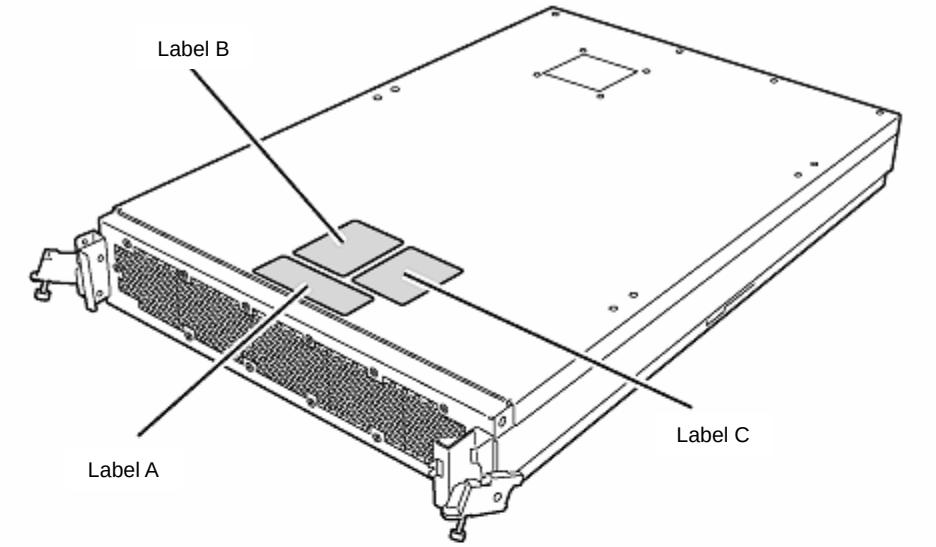


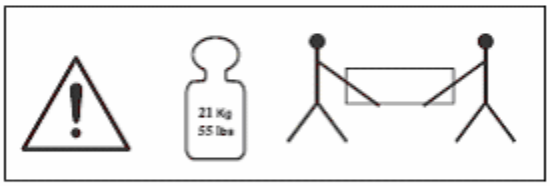
Label D



CPU Module

The figures below show locations of the labels on CPU module:





Label A



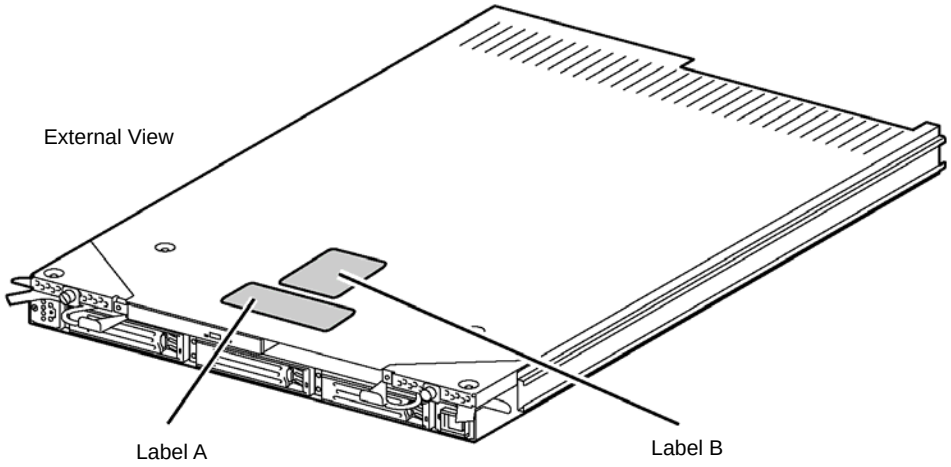
Label B

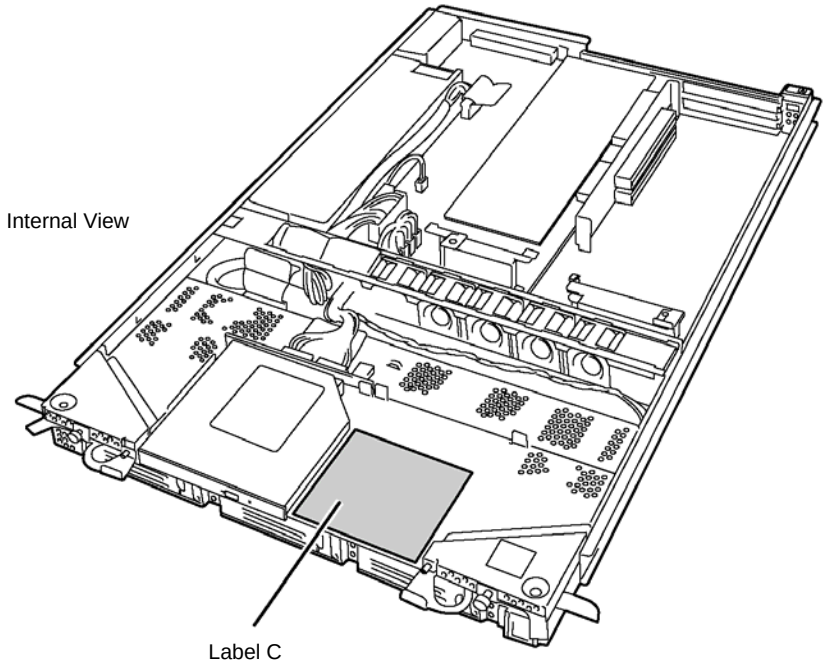


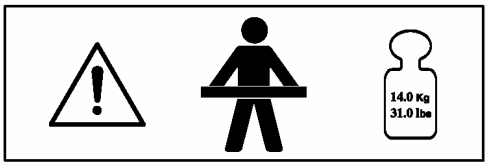
Label C

PCI Module

The figures below show locations of the labels on PCI module:



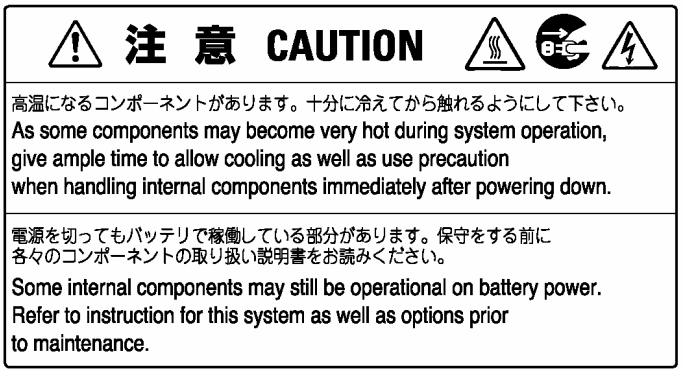




Label A



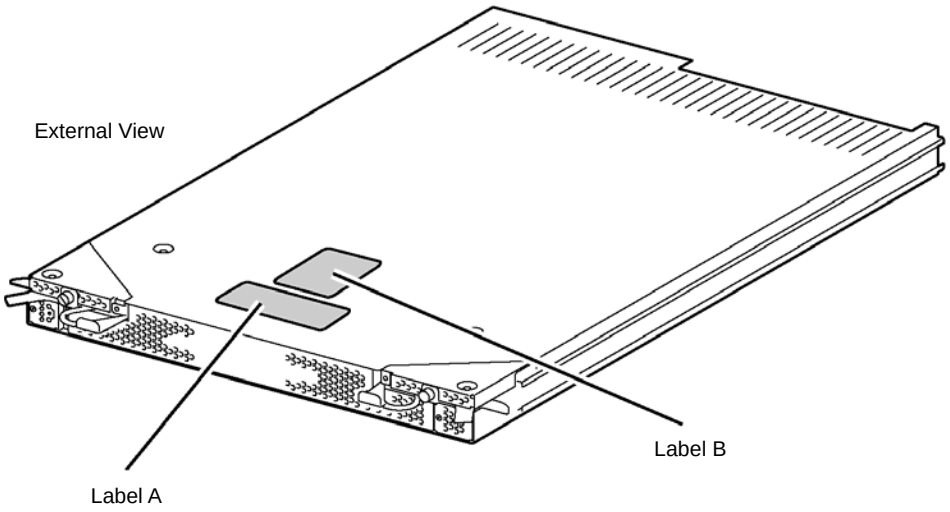
Label B

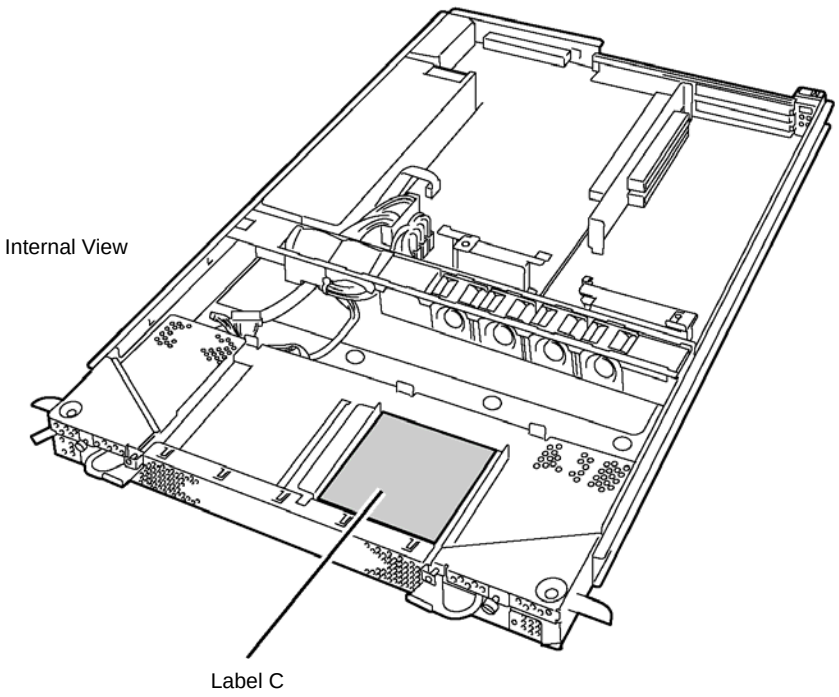


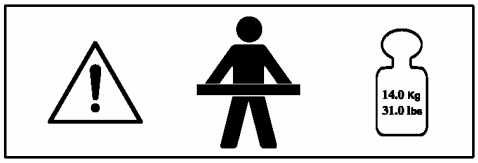
Label C

Expansion PCI Module

The figure below shows locations of the labels on expansion PCI module:



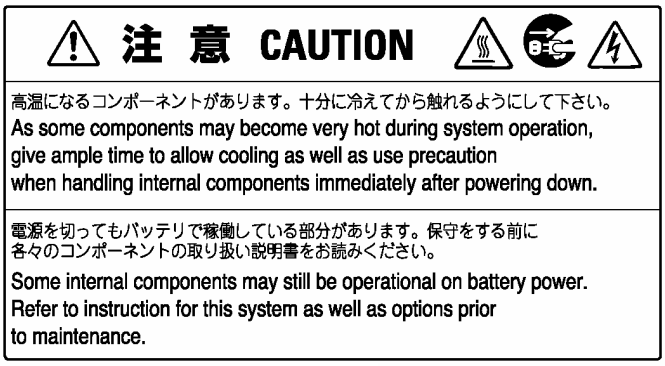




Label A



Label B



Label C

PRECAUTIONS FOR SAFETY

This section provides precautions for using the server safely. Read this section carefully to ensure proper and safe use of the server. For symbol meanings, see "SAFETY INDICATIONS" described in the previous section.

General

⚠ WARNING



Do not use the equipment in an operation where human lives are involved or high reliability is required.

This equipment is not intended for use in controlling or use with facilities or systems where human lives are involved or high reliability is required, including medical devices or nuclear, aerospace, transportation, and traffic control facilities. NEC assumes no liability for any accidents or damage to physical assets resulting from the use of this equipment in such systems or facilities.



Do not continue to use the equipment if you detect smoke, odor, or noise.

If the equipment emits smoke, odor, or noise, immediately turn off the server, unplug the cord, and contact your sales agent. There is a risk of a fire.



Do not insert a wire or metal object

Do not insert a wire or metal objects into a vent or disk drive slot. There is a risk of an electric shock.



Do not use the equipment in an unsuitable place.

Do not install a server rack in an unsuitable environment. Other systems also may be affected and the rack may fall over to cause a fire or injuries. For details about installation environment and quake-resistant engineering, see the attached manual or contact your sales agent.



Do not install the equipment on a nonconforming rack.

Install the equipment on a 19-inch rack confirming to the EIA standard. Do not use the equipment without a rack or install it on a nonconforming rack. The equipment may not function properly, and there is a risk of damage to physical assets or injuries. For suitable racks, contact your sales agent.

⚠ CAUTION



Prevent water or foreign objects from getting into the equipment.

Do not let water or foreign objects (e.g., pins or paper clips) enter the equipment. There is a risk of a fire, electric shock, and breakdown. When such things accidentally enter the equipment, immediately turn off the power and unplug the cord. Contact your sales agent instead of trying to disassemble it yourself.

Use of Power Supply and Power Cord

⚠ WARNING



Do not handle a power plug with a wet hand.

Do not plug/unplug a power cord with a wet hand. There is a risk of an electric shock.



Do not connect the ground wire to a gas pipe.

Never connect the ground wire to a gas pipe. There is a risk of a gas explosion.

⚠ CAUTION



Do not plug the cord in a nonconforming outlet.

Use a wall outlet with specified voltage and power type. There is a risk of a fire or current leakage.
Avoid installing the equipment where you may need an extension cord. If the cord that does not meet the power specifications, there is a risk of overheating that could lead to a fire.



Do not plug too many cords in a single outlet.

If the rated current is exceeded, there is a risk of overheating that could lead to a fire.



Do not plug the cord insecurely.

Insert the plug firmly into an outlet. There is a risk of heat or fire due to poor contact. If dust settles on the slots and it absorbs moisture, there is also a risk of heat or fire.



Do not use the nonconforming power cords.

Use the power cords specified by NEC. If the rated current is exceeded, there is a risk of a fire. You also have to observe the following prohibitions about handling and connecting interface cables.

- Do not stretch the cord harness.
- Do not pinch the power cord.
- Do not bend the power cord.
- Keep chemicals away from the power cord.
- Do not twist the power cord.
- Do not place any object on the power cord.
- Do not use cords as bundled.
- Do not alter, modify, or repair the power cord.
- Do not secure the power cord with staples or equivalents.
- Do not use any damaged power cord. (Replace a damaged power cord with a new one of the same specifications. Ask your sales agent for replacement.)

Installation, Relocation, Storage and Connection

⚠ WARNING



Disconnect the power cord(s) before installing or removing the equipment.

Be sure to power off the equipment and unplug its power cords from the wall outlet before installation/relocation. All voltage is removed only when the power cords are unplugged.

⚠ CAUTION



Never attempt to lift the CPU module only by yourself.

The CPU module weighs approx. 21 kg (depending on its hardware configuration). Carrying the CPU module only by yourself may strain your back. Hold the CPU module firmly by its bottom with another person to carry it.
The PCI module and the expansion PCI module weighs approx. 14 kg (depending its hardware configuration). Hold the module firmly by its bottom.



Do not install the equipment in an unsuitable place.

Install the equipment in such a place as specified in this User's Guide. Avoid the following, or there is a risk of a fire.

- a dusty place
- a humid place located near a boiler, etc
- a place exposed to direct sunlight
- an unstable place



Do not use or store this product in corrosive environment.

Avoid the usage or storage of this product in an environment which may be exposed to corrosive gases, such as those including but not limited to: sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia and/or ozone.
Avoid installing this product in an environment or one that may be exposed to corrosive materials such as sodium chloride and/or sulfur.
Avoid installing this product in an environment which may have excessive metal flakes or conductive particles in the air.
Such environments may cause corrosion or short circuits within this product, resulting in not only damage to this product, but may even lead to be a fire hazard. If there are any concerns regarding the environment at the planned site of installation or storage, please contact your sales agent.



Do not use any non-designated interface cable.

Use only interface cables designated by NEC; identify which component or connector to attach beforehand. If you use a wrong cable or make a wrong connection, there is a risk of short-circuit that could lead to a fire.
You also have to observe the following prohibitions about handling and connecting interface cables:

- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the equipment with loose cable connections.

Cleaning and Handling of Internal Devices

⚠ WARNING



Do not disassemble, repair, or alter the server.

Unless described herein, never attempt to disassemble, repair, or alter the equipment. There is a risk of an electric shock or fire as well as malfunction.



Do not look into the CD-ROM drive

The CD-ROM drive uses a laser beam. Do not look or insert a mirror inside while the system is on. A laser beam is invisible; if your eyes get exposed to it, there is a risk of losing eyesight.



Do not detach a lithium battery yourself.

This equipment has a lithium battery. Do not detach it yourself. If the battery is exposed to fire or water, it could explode.

When the lithium battery is running down and the equipment doesn't work correctly, contact your sales agent instead of disassembling, replacing or recharging it yourself.



Disconnect the power plug before cleaning the server.

Make sure to power off the server and disconnect the power plug from a power outlet before cleaning or installing/removing internal optional devices. Touching any internal device of the server with its power cord connected to a power source may cause an electric shock even of the server is off-powered.

Disconnect the power plug from the outlet occasionally and clean the plug with a dry cloth. Heat will be generated if condensation is formed on a dusty plug, which may cause a fire.

⚠ CAUTION



High temperature

Immediately after powering off the system, system components such as hard disk drive may be very hot. Wait for the server to cool down completely before adding/removing components.



Make sure to complete installation.

Firmly install all power cords, interface cables and/or boards. An incompletely installed component may cause a contact failure, resulting in fire and/or smoke.



Protect the unused connectors with the protective cap.

The unused power cord connectors are covered with the protective cap to prevent short circuits and electrical hazards. When removing the power cord connector from the internal devices, attach the protective cap to the connector. Failure to follow this warning may cause a fire or an electric shock.

During Operation

⚠ CAUTION



Do not pull out a device during operation.

Do not pull out or remove a device while it works. There is a risk of malfunction and injuries.



Do not touch the equipment when it thunders.

Unplug the equipment when it threatens to thunder. If it starts to thunder before you unplug the equipment, do not touch the equipment and cables. There is a risk of a fire or electric shock.



Keep animals away.

Animal's waste or hair may get inside the equipment to cause a fire or electric shock.



Do not place any object on top of the server.

The object may fall off to cause injuries, damage to hardware and/or a fire.



Do not leave the CD tray ejected.

Dust may get in the equipment to cause malfunction. The ejected tray may also become a cause of injuries.



Do not use a cellular phone or pager around the equipment.

Turn off your cellular phone or pager when you use the equipment. Their radio waves may cause the equipment to malfunction.

Rack-mount Model

⚠ WARNING

Do not use the equipment in an unsuitable place.

Do not install a server rack in an unsuitable environment.
Otherwise, other systems also may be affected, and the rack may fall over to cause a fire or injuries. For details about installation environment and quake-resistant engineering, see the attached manual or contact your sales agent.

Do not install the equipment on a nonconforming rack.

Install the equipment on a 19-inch rack confirming to the EIA standard. Do not use the equipment without a rack or install it on a nonconforming rack. Otherwise, the equipment may not function properly, and there is a risk of damage to physical assets or injuries. For suitable racks, contact your sales agent.

⚠ CAUTION

Do not carry or install the server only by a single person.

More than one person is required to carry or install the rack. Failure to follow this instruction may cause the rack to fall to result in personal injury and/or breakage of surrounding devices. In particular, a high rack (such as 44U rack) is unstable if it is not fixed by stabilizers. More than one person must always carry or install the rack while they support it.

Do not install the equipment in such a manner that its weight is imposed on a single place.

To distribute the weight, attach stabilizers or install two or more racks. Otherwise, it may fall down to cause injuries.

Do not assemble parts alone.

It takes at least two people to mount doors and trays to a rack. Otherwise, you may drop some parts to cause a breakage or injuries.

Do not pull a device out of the rack if it is unstable.

Before pulling out a device, make sure that the rack is fixed (by stabilizers or quake-resistant engineering).

⚠ CAUTION



Do not leave two or more devices pulled out from the rack.

If you pull out two or more devices the rack may fall down. You can only pull out one device at a time.



Do not install excessive wiring.

To prevent burns, fires, and damage to the equipment, make sure that the rated load of the power branch circuit is not exceeded. For more information on installation and wiring of power-related facilities, contact your electrician or local power company.



Do not pinch your finger with rails or other components.

Note sufficiently that your fingers may not be caught between a rail and another mechanical part or cut by a rail at installation or removal of the server from the rack.



Do not pull out or remove the server from the rack while it is operating.

Do not pull out or remove the server from the rack while it is operating. Doing so may cause not only the server to operate incorrectly but also the server to fall on people to make them injured.

For Proper Operation

Observe the following instructions for successful operation of the server. Failure to observe them could lead to malfunction or breakdown.

- Perform installation in a place where the system can operate correctly. For details, see the separate volume “User's Guide (Setup)”.
- Before turning off the power or ejecting a disk, make sure that the DISK LED is off.
- When you have just turned off the power, wait at least 30 seconds before turning it on again.
- Once you have turned on the server, do not turn it off until the "NEC" logo appears on the screen.
- Before you move the equipment, turn off the power and unplug the cord.
- This server shall not assure reproduction of copy-protect CDs using reproduction equipment if such disks do not comply with CD standards.
- Clean the equipment regularly. (For procedures, see Chapter 6.) Regular cleaning is effective in preventing various types of trouble.
- Lightning may cause voltage sag. As a preventive measure, it is recommended to use UPS (uninterruptible power supply).

  This equipment does not support the connection through an UPS serial port (RS-232C) or the control using PowerChutePlus.
- Check and adjust the system clock before operation in the following conditions:
  - After transporting the equipment
  - After storing the equipment
  - After the equipment halt under the conditions which is out of the guaranteed environment conditions (Temperature: 10 to 35°C, Humidity: 20 to 80%).

  Check the system clock once in a month. It is recommended to operate the system clock using a time server (NTP server) if it is installed on the system which requires high level of time accuracy. If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment is performed, contact your sales agent.
- When you store the equipment, keep it under storage environment conditions (Temperature: -10 to 55°C, Humidity: 20 to 80%, non-condensing).
- If NEC Express5800/ft series, the built-in optional devices, and the media set for the backup devices (tape cartridges) are moved from a cold place to a warm place in a short time, condensation will occur and cause malfunctions and breakdown when these are used in such state. In order to protect important stored data and assets, make sure to wait for a sufficient period of time to use the server or components in the operating environment.

  Reference: Length of the time effective at avoiding condensation in winter (more than 10°C differences between room temperature and atmospheric temperature)

  Disk devices: Approximately 2-3 hours

  Tape media: Approximately 1 day
- Use the UPS having "Auto-return feature" that protects the UPS from rush current generated at startup of the device by switching to bypass circuit with no voltage drop. However, if the power supply failed while switching to a bypass circuit (for tens of seconds), the normal operation of the device will not be guaranteed.
- Make sure that your options are compatible with the system. If you attach any incompatible option, there is a risk of malfunction that could lead to a breakdown.

- It is recommended to use NEC's genuine option products. Some competitors' products are compatible with this server. However, servicing for trouble or damage resulting from such a product will be charged even within the warranty period.

TRANSFER TO THIRD PARTY

When you transfer (or sell) the product or its included items, you must observe the following:

Server

Attach this User's Guide to the server you are transferring (or selling) to a third party.

IMPORTANT: Data remaining on hard disk:

When you transfer your server, you are responsible for erasing important data stored on its hard disk (e.g., customer information, accounting information); you must be careful to prevent such data from leaking out to outsiders.

Even if you perform "Empty trash" on Windows operating system or execute a "format" command to erase data superficially, the data actually remains on the hard disk. If data is not erased completely, it could be restored by certain software and be used for unexpected purposes.

You are strongly recommended to buy a special type of software or service to avoid such trouble. For details, contact your sales agent.

NEC shall not be accountable for such data leakage caused by your failure to take necessary measures.

Included Software

When you transfer or sell the included software to a third party, you must meet the following conditions:

- Transfer all of the software included with the system. Do not retain any copies.
- Meet the conditions of transfer described in each software license agreement.
- Uninstall untransferable programs, if any, from the server before the transfer.

DISPOSAL OF EQUIPMENT AND CONSUMABLES

- When you dispose of the main unit, hard disk drive, floppy disks, CD-ROMs, optional boards, etc., you need to observe your local disposal rules. For details, ask your municipal office.

  IMPORTANT: For disposal (or replacement) of batteries on the board, consult with your sales agent.

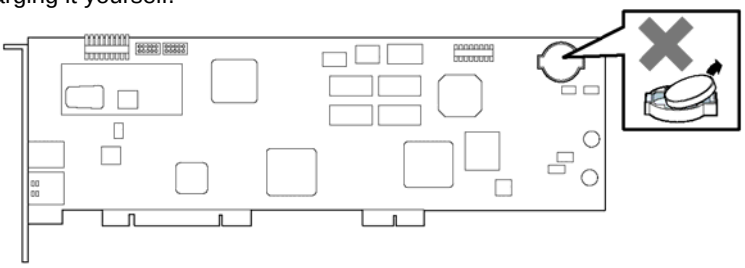
  If data remains on the hard disk, backup data cartridges, floppy disks, or other writable media (such as CD-R and CD-RW), it could be restored and reused by outsiders. The customer is responsible for wiping out such data before disposal. You need to exercise sufficient care to protect privacy and confidential information.

- Some of the system components have limited lifetime (e.g., cooling fans, built-in batteries, built-in CD-ROM drive, floppy disk drive, and mouse). For stable operation, it is recommended to replace them regularly. For lifetime of individual components and replacing procedures, ask your sales agent.

⚠ WARNING

Do not detach a lithium battery yourself.

This equipment has a lithium battery. Do not detach it yourself. If the battery is exposed to fire or water, it could explode.
RISK OF EXPLOSION IF BATTERY IS REPLACED WITH INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
When the lithium battery is running down and the equipment doesn't work correctly, contact your sales agent instead of disassembling, replacing or recharging it yourself.



SMM

IF SYSTEM TROUBLE IS SUSPECTED

Before sending the equipment for repair, try the following:

1. Check if its power cord and connection cables are attached correctly.
2. See "Error Messages" in Chapter 7 to check if there is a relevant symptom. If yes, take measures as instructed.
3. Certain software programs are required for operation of NEC Express5800/ft series. Check if these programs are properly installed.
4. Use a commercially available anti-virus program to check the server.

If the problem isn't solved by the above actions, stop using the server and consult with your sales agent. In this case, check LED indications of the server and alarm indications on the display, which will serve as helpful information at the time of repair.

ABOUT REPAIR PARTS

The minimum duration of holding repair parts of this equipment may be different for each country, so contact the NEC sales representatives.

If the period is not specified, the repair parts are kept for 5 years after discontinuance of the product.

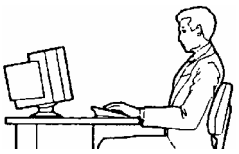
Advice for Your Health

Prolonged use of a computer may affect your health. Keep in mind the following to reduce stresses on your body:

Sit in a good posture

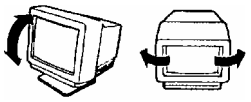
Sit on your chair with your back straight. If the desk height is appropriate, you will slightly look down at the screen and your forearms will be parallel to the floor. This "good" work posture can minimize muscle tension caused by sedentary work.

If you sit in a "bad" posture—for example, sit round-shouldered or with you face too close to the display—you may easily suffer fatigue or have your eyesight affected.



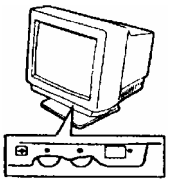
Adjust the installation angle of Display

Most types of displays allow you to adjust the angle vertically and horizontally. This adjustment is very important to prevent the reflection of light as well as to make the screen more comfortable to see. Without this adjustment, it is difficult to maintain a "good" work posture and may get tired soon. Be sure to adjust the angle before using the display.



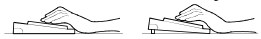
Adjust Brightness and Contrast

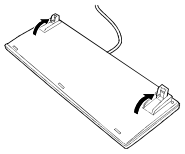
Displays allow you to adjust brightness and contrast. Optimum brightness and contrast vary depending on the individual, age, brightness of the room, etc; you need to make an adjustment accordingly. If the screen is too bright or too dark, it is bad for your eyes.



Adjust the installation angle of Keyboard

Some types of keyboards allow you to adjust the angle. If you adjust the angle to make the keyboard more comfortable to use, you can greatly reduce stresses on your shoulders, arms, and fingers.





Clean the Equipment

Cleanliness of the equipment is very important not only for reasons of appearance but also from the viewpoints of function and safety. Especially, you need to regularly clean the display, which gets unclear due to the accumulation of dirt.

Take a break when you get tired

If you feel tired, you are recommended to refresh yourself by taking a short break or doing a light exercise.



Chapter 2

General Description

This chapter describes what you need to know to use the NEC Express5800/ft series. Refer to this chapter when you want to know about certain components and how to operate them.

STANDARD FEATURES

High performance
- Intel® Xeon™ Processor MP
- High-speed Ethernet interface (1000Mbps/100Mbps/10Mbps supported)
- High-speed disk access (Ultra160 SCSI Wide)

Expandability
- Six slots of PCI bus (33MHz)
- Six slots of expansion PCI bus (66MHz)
- Large memory of up to 12 GB
- Remote power-on feature
- USB interface

High-reliability
- Memory monitoring feature (1-bit error correction/ 2-bit error detection)
- Bus parity error detection
- Temperature monitoring
- Error notification
- Built-in fan monitoring feature
- Internal voltage monitoring feature
- BIOS password feature

Various Features
- Graphic accelerator "CT69000" supported
- El Torito Bootable CD-ROM (no emulation mode) format supported
- POWER switch mask
- Remote power-on feature
- AC-LINK feature
- Consoleless feature

Self-diagnosis
- Power On Self-Test (POST)
- Test and Diagnosis (T&D) Utility

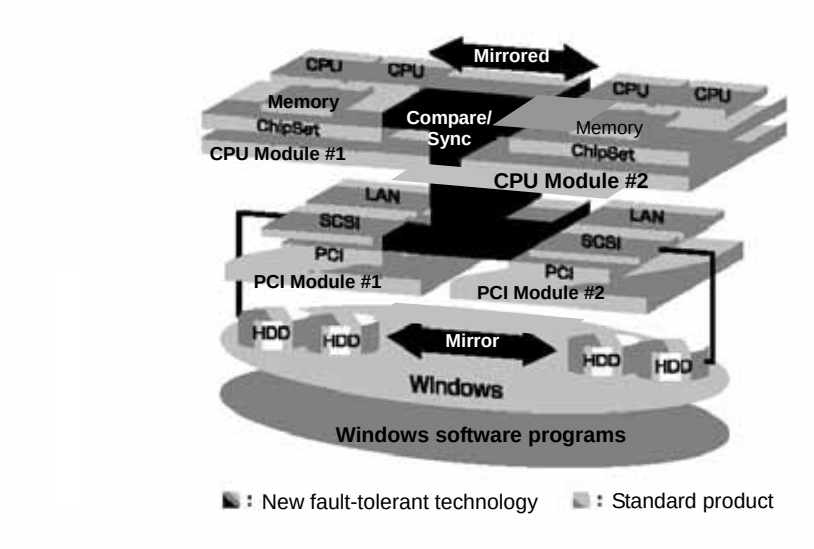
Management Utilities
- NEC ESMPRO

Easy and Fine Setup
- NEC EXPRESSBUILDER (system setup utility)
- SETUP (BIOS setup utility)
- *Fast!*UTIL (SCSI device utility)

Ready-to-use
- Quick cableless connection: hard disk drive, CPU module, PCI module and expansion PCI module (hot-swap supported)

Fault-tolerant Feature
- Redundant modules achieved within a system
- Higher hardware availability by isolation of failed module

The NEC Express5800/ft series achieves fault-tolerant high-availability in a space-saving form factor by incorporating redundant hardware module pairs in a single chassis. These modules work in synchronous tight lockstep while constantly making comparisons with each other and detecting anomalous diversions in operation.



Even if one hardware module stops, the server can continue operation with the other module. After the failed module is replaced, the new module will obtain information from the other and resume operation.

NEC Express5800/ft series is a highly fault-tolerant Windows server that achieves continuous computing operations, data storage mirror, and continuous network connection. It allows you to run Windows Server 2003-based applications.

NEC Express5800/ft series achieves continuous computing operations for the Windows server and server-based applications with its redundant CPU processing and redundant memory. It assures data redundancy through duplication of server data on an independent storage system. These features eliminate server downtime that is usually caused by network disconnection or trouble with the I/O controller, Ethernet adapter or disk drive, and support operation of the network and server applications continuously. While being transparent to application software, NEC Express5800/ft series achieves high fault-tolerance.

NEC Express5800/ft series detects status changes, errors and other events and notifies the Windows Event Log of these events. If you use an alarm notification tool, you can configure NEC Express5800/ft series to notify you when certain events occur.

NEC ESMPRO is installed on the system as a server management solution. NEC ESMPRO, a GUI-based management tool, allows you to monitor, view, and configure NEC Express5800/ft series. This tool also supports both local and remote management of NEC Express5800/ft series.

NEC Express5800/ft series mainly provides the following advantages:

- Highly fault-tolerant processing and I/O subsystems

  NEC Express5800/ft series use redundant hardware and software to assure server operation even if one module suffers trouble with its processor, memory, I/O (including trouble related to the I/O controller), disk drive, or Ethernet adapter.

- Continuous network connection

  NEC Express5800/ft series maintains continuous network connection by detecting any trouble with the network adapter, connection, etc. If trouble occurs, the standby network connection will take over all network traffic processing and thus securely maintain the network system connection of NEC Express5800/ft series without losing network traffic or client connection.

- Support of multiple network connections

  Since NEC Express5800/ft series can support multiple Ethernet connections, you can add network redundant control or network traffic control.

- Industry standard hardware platform

  NEC Express5800/ft series uses IA (Intel Architecture)-based system hardware.

- No need to modify applications

  You can run Windows Server 2003-compliant applications on NEC Express5800/ft series. Thus, unlike other highly fault-tolerant products, special API or scripts are not necessary.

- Automatic mirroring

  NEC Express5800/ft series automatically maintains data as the current data.

- Automatic detection and notification of faults

  NEC Express5800/ft series detects and sorts out all events such as general status changes and faults, and notifies Windows Event Log of these events.

- Transparent migration

  NEC Express5800/ft series constantly monitors events. If trouble occurs on NEC Express5800/ft series' server module, it will transparently use a redundant module of the failed module. This feature maintains data and user access without losing application service.

- Automatic reconfiguration

  When the failed module restarts after the trouble is corrected, NEC Express5800/ft series will perform reconfiguration automatically, and if necessary, resynchronize the affected modules. Reconfiguration can include CPU processing (e.g., CPU memory), server's operating system (and related applications), and system data stored on the hard disks. In most cases, NEC Express5800/ft series automatically restores redundancy of the server modules after recovery.

- Local and remote management

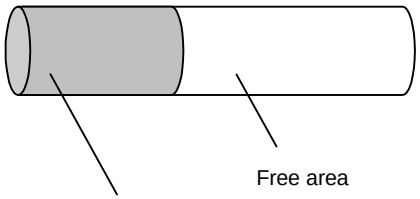
  NEC Express5800/ft series uses NEC ESMPRO as a server management tool. This tool uses a GUI that enables monitoring and setting of NEC Express5800/ft series. NEC ESMPRO can be used both locally and remotely on workstation PCs or server PCs.

- Event notification function

  When trouble or other events are detected on NEC Express5800/ft series, they will be notified to Windows Event Log and saved. Therefore, you can view the log items locally or remotely by a usual Windows procedure. Since NEC Express5800/ft series events use unique IDs, they are easy to distinguish.

- In-service repairing
- You can repair or replace a failed module even if NEC Express5800/ft series is operating.
- Partition structure

  On this product, the first logical drive will be in the following state when the setup by NEC EXPRESSBUILDER is complete:



* The size varies depending on the specification at setup.

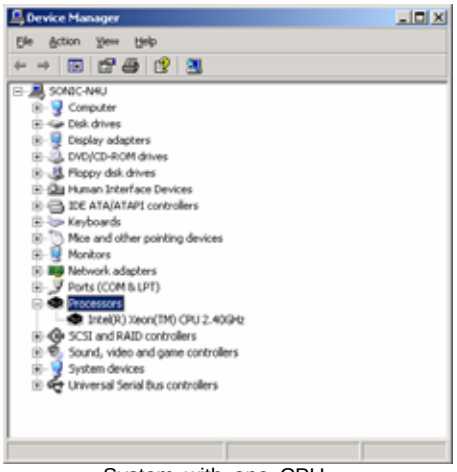
CHECK: The partition for operating system is not mirrored at the time of NEC EXPRESSBUILDER setup completion. Mirror the partition separately.

HOW THE OPERATING SYSTEM SEES THE CPU MODULES

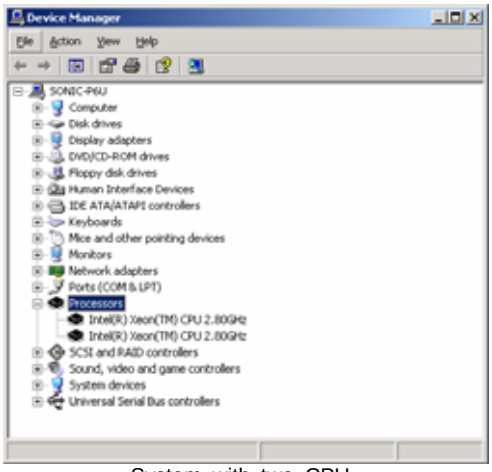
On NEC Express5800/ft series, the CPU modules are redundantly configured but only the processors installed on the **primary** side are shown.

How CPU modules appear on Device Manager

Device Manager shows as many CPUs as the number of physical CPUs.



System with one CPU

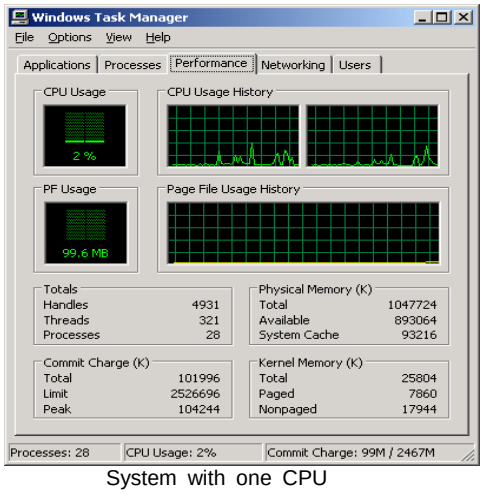


System with two CPU

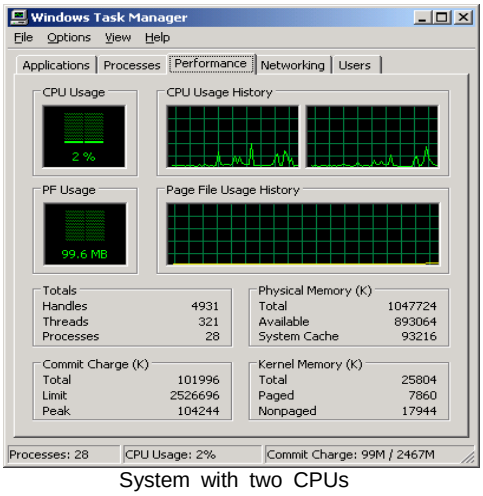
How CPU modules appear on Task Manager

Intel Xeon processor introduces a new technology called Hyper-Threading Technology. It is a technology that makes the operating system see a single processor performing as two logical processors.

Task Manager shows logical processors using the Hyper-Threading Technology. As shown below, information for the processors of twice the number of physical processors is displayed.



System with one CPU

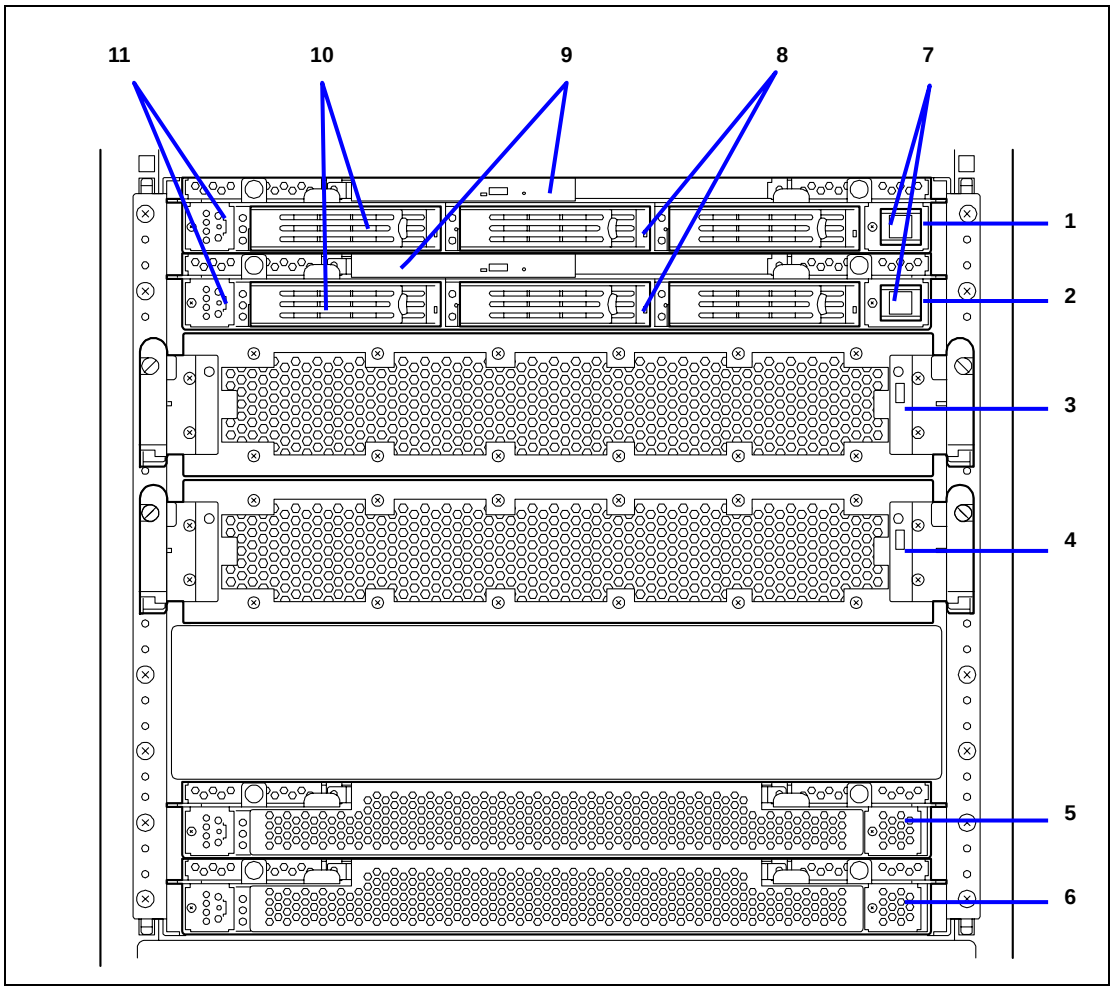


System with two CPUs

NAMES AND FUNCTIONS OF COMPONENTS

Names and functions of components are shown below:

Front View (with Front Bezel Removed)



1 PCI module 10 (for group 1)
A module that includes a PCI board, LAN controller, SCSI controller, and SMM board.

2 PCI module 11 (for group 2)
A module that includes a PCI board, LAN controller, SCSI controller, and SMM board.

3 CPU module 0 (for group 1)
A module that includes a CPU (processor) and memory (DIMM).

4 CPU module 1 (for group 2)
A module that includes a CPU (processor) and memory (DIMM).

5 Expansion PCI module 13 (for group 1)
A module that includes expansion PCI board (See page 2-14.)

6 Expansion PCI module 12 (for group 2)
A module that includes expansion PCI board (See page 2-14.)

IMPORTANT: Note that upper module is module 13 and the lower module is module 12 for expansion PCI modules.

7 POWER switch
A switch for turning on/off power to the system. The POWER switch on the primary PCI module will be lit. Press it once to turn on power. Press it again to turn off power. Depress the switch for more than four seconds to force the system to power down. The POWER switch on the secondary PCI module will be unlit and will not respond until a failure in the primary PCI module causes the secondary PCI module to assume primary functionality.

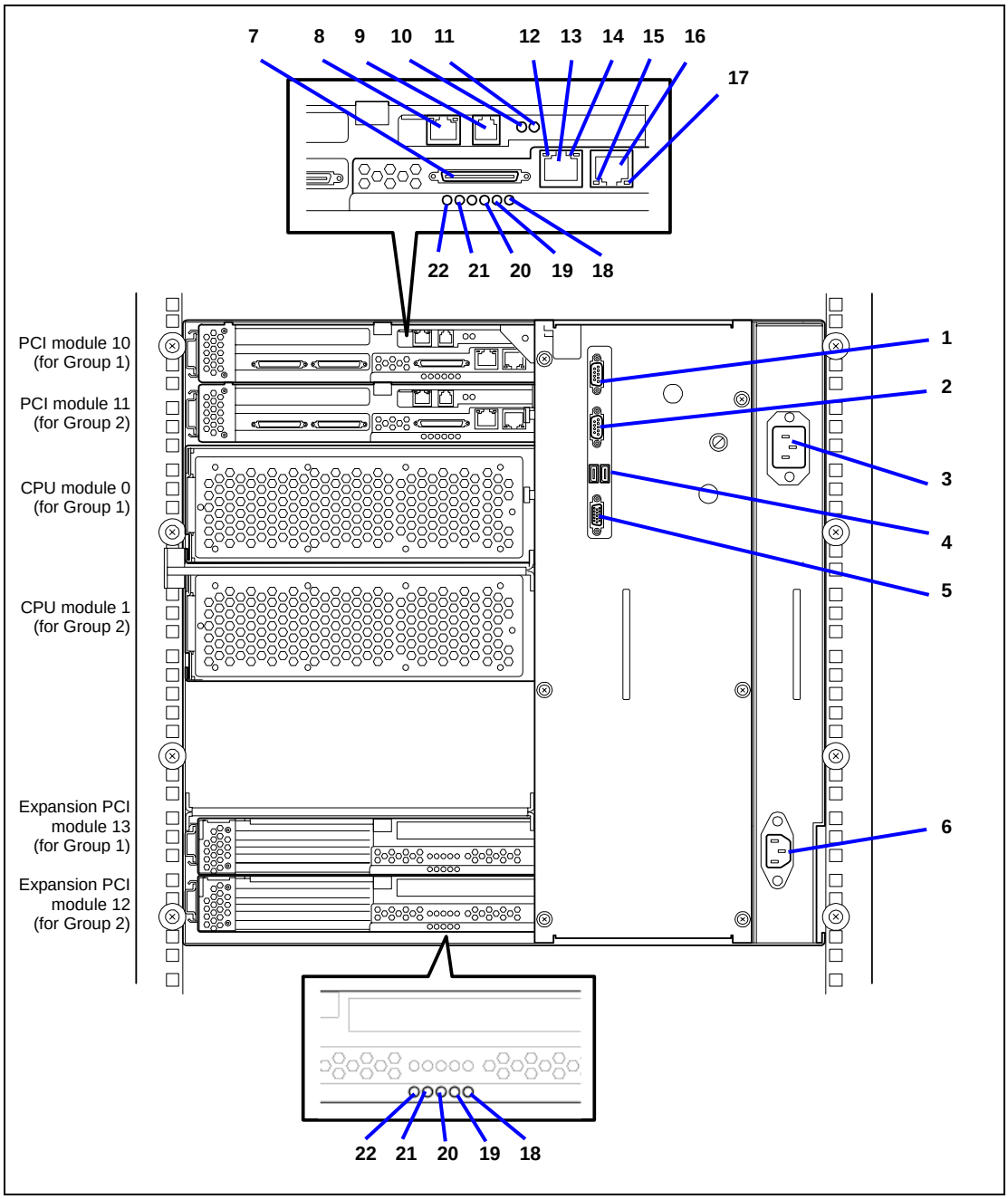
8 DISK LED (green/amber)
An LED on the hard disk drive. Blinks in green while the hard disk is accessed and turn amber when operating in simplex mode. If one of the mirrored hard disks fails, the failed disk's LED turns green and the other disk's LED turns amber.

9 CD-ROM drive
Used for reading data from CD-ROMs.
Although there are two CD-ROM drives, only the one on the active primary PCI module can be used the module with the lit POWER Switch LED.

10 3.5-inch hard disk drive bay
Slots for adding hard disk drive drives. They are called Slots 1, 2, and 3 from the left. Slots of the same number are mirrored between the groups 1 and 2.

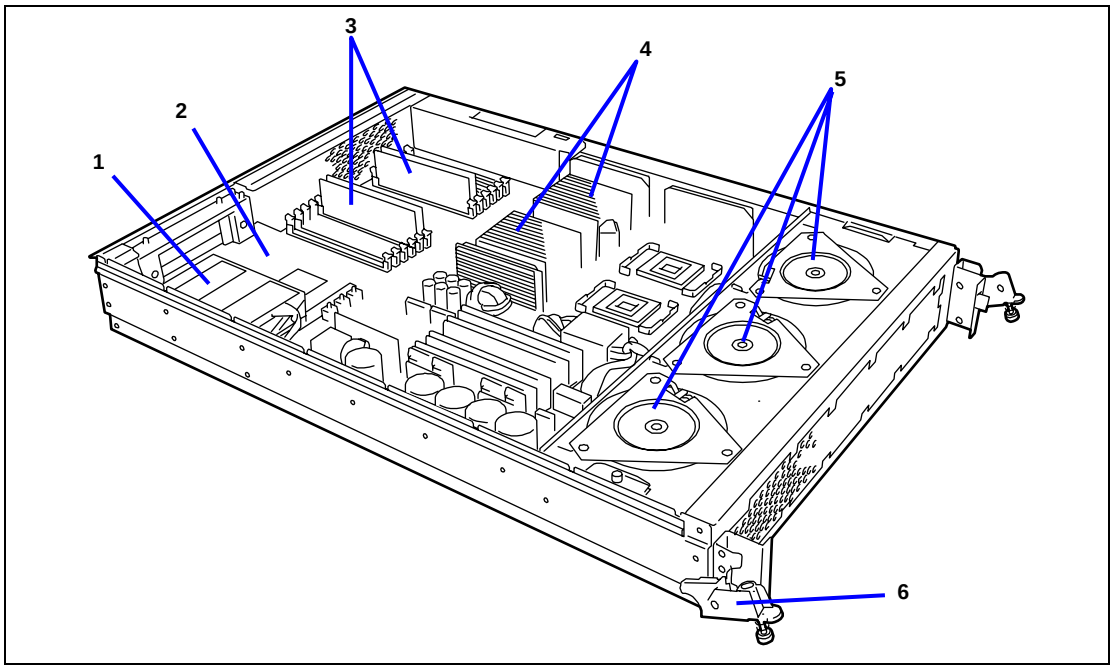
11 DUMP switch
A switch for outputting a memory image from the kernel to a file.

Rear View


7
8
9
10
11
12
13
14
15
16
17
22
21
20
19
18
PCI module 10 (for Group 1)
PCI module 11 (for Group 2)
CPU module 0 (for Group 1)
CPU module 1 (for Group 2)
Expansion PCI module 13 (for Group 1)
Expansion PCI module 12 (for Group 2)
1
2
3
4
5
6
22
21
20
19
18

1 **Serial port 1 (A) connector**
Connected to a device that has a serial interface. For maintenance use only.
2 **Serial port 2 (B) connector**
Connected to a device that has a serial interface. For maintenance use only.
3 **AC inlet A (for Group 1)**
PC socket for plugging a power cord (for Group 1). If you desire to make the PCI module for Group 1 primary, use this inlet to connect the power cord first.
4 **USB connector 1 (left)/USB connector 2 (right)**
Connected to devices that support the USB interface.
5 **Monitor connector**
Connected to the display unit.
6 **AC inlet B (for Group 2)**
PC socket for plugging a power cord (for Group 2). If you desire to make the PCI module for Group 2 primary, use this inlet to connect the power cord first.
7 **SCSI connector**
Used for connecting external SCSI devices.
8 **RJ-45 (LAN) controller**
Not used in this system.
9 **RJ-11 (Modem) controller**
Not used in this system.
10 **SMM board status LED (green/amber)**
See "LEDs" in this chapter for details.
11 **SMM board status LED (red)**
See "LEDs" in this chapter for details.
12 **LINK/ACT LED**
See "LEDs" in this chapter for details.
13 **LAN connector 1**
A connector for 1000BASE-T, 100BASE-TX, and 10BASE-T. Connected to the network system on LAN.
14 **1000/100/10 LED**
See "LEDs" in this chapter for details.
15 **LINK/ACT LED**
See "LEDs" in this chapter for details.
16 **LAN connector 2**
A connector for 100BASE-TX and 10BASE-T. Connected to the network system on LAN.
17 **100/10 LED**
See "LEDs" in this chapter for details.
18 **PCI board slot status LED (Slot3)**
See "LEDs" in this chapter for details.
19 **PCI board slot status LED (Slot2)**
See "LEDs" in this chapter for details.
20 **PCI board slot status LED (Slot1)**
See "LEDs" in this chapter for details.
21 **PCI module status LED 2**
See "LEDs" in this chapter for details.
22 **PCI module status LED 1**
See "LEDs" in this chapter for details.

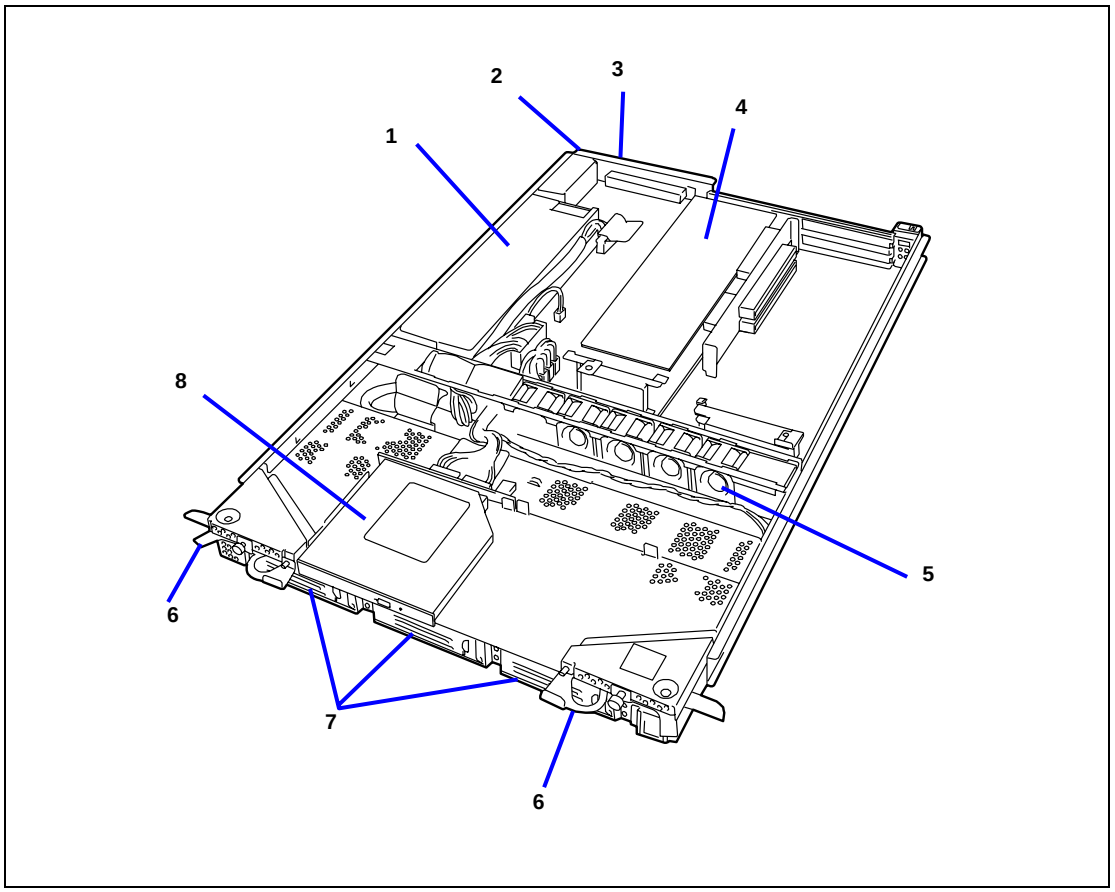
CPU Module



Group 1 and group 2 have the same configuration.

1 Power unit
2 CPU module board
3 DIMM
4 CPU (processor)
5 Cooling fan
6 Module handles

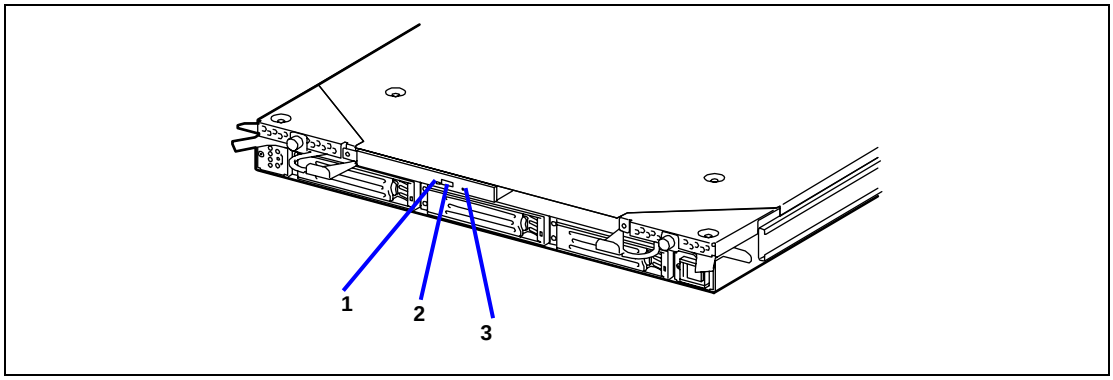
PCI Module



Group 1 and group 2 have the same configuration.

1. Power unit
2. AC inlet (in the rear)
3. Backpanel connector (in the rear)
4. SMM board
5. Cooling fan
6. Module handles
7. 3.5-inch hard disk drive bay
   One hard disk drive is factory-installed in slot 1.
8. CD-ROM drive

CD- ROM Drive

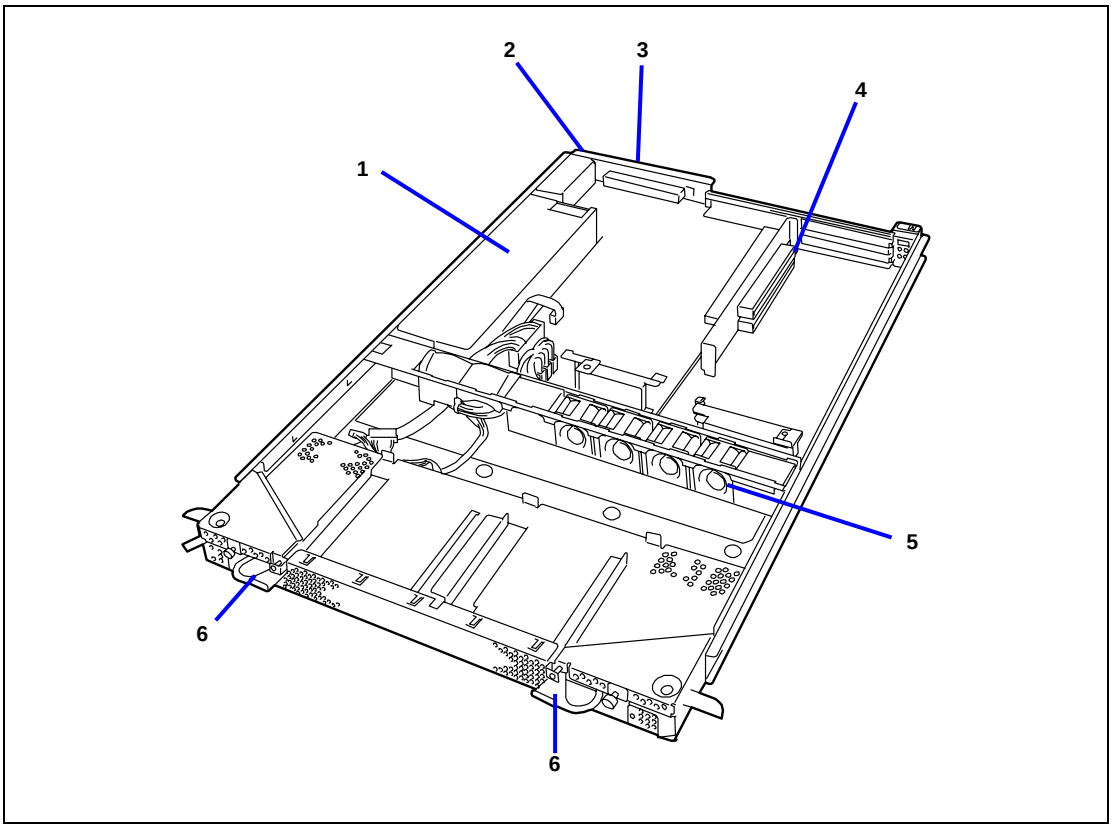


1 Access LED
An LED that stays on while the loaded CD-ROM is accessed.

2 CD tray eject button
A button for ejecting the CD tray.

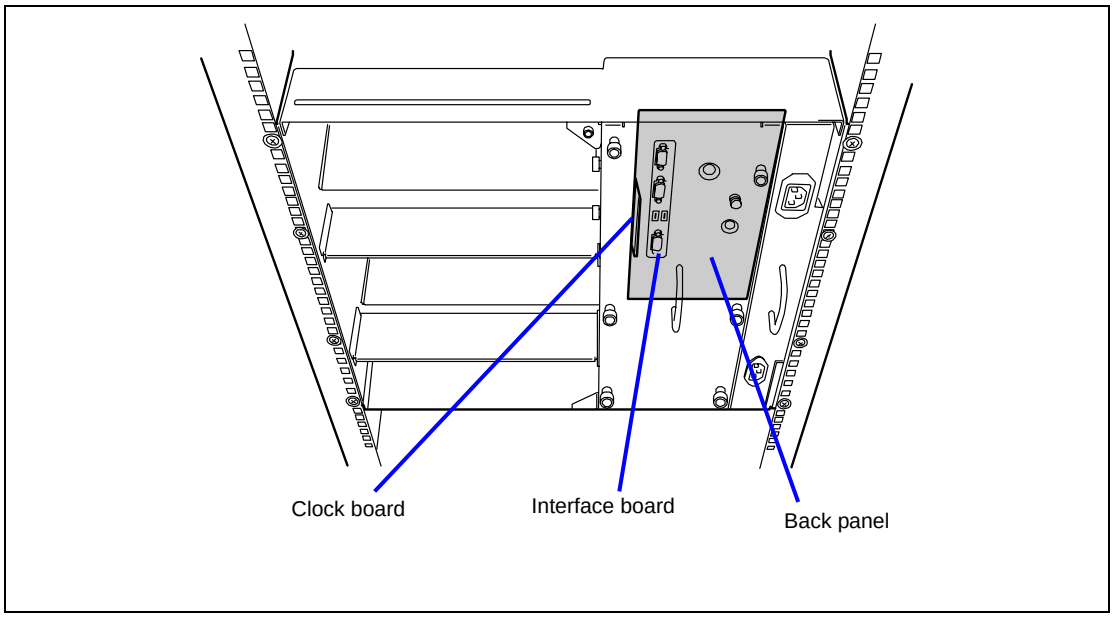
3 Manual release hole
When the eject button does not work, insert a metal pin into this hole to forcefully eject the CD tray.

Expansion PCI Module



1 Power unit
2 AC inlet (in the rear)
3 Backpanel connector (in the rear)
4 PCI board slots
5 Cooling fan
6 Module handles

Chassis Board Layout



LEDs

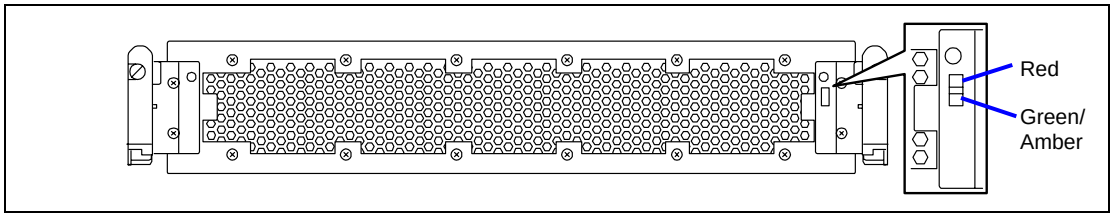
This section describes indications and meanings of the LEDs on NEC Express5800/ft series.

POWER LED

The POWER switch of the PCI module also functions as a POWER LED. When power is supplied to the modules, POWER LED on the primary side will illuminate (the switch also works on the primary side alone).

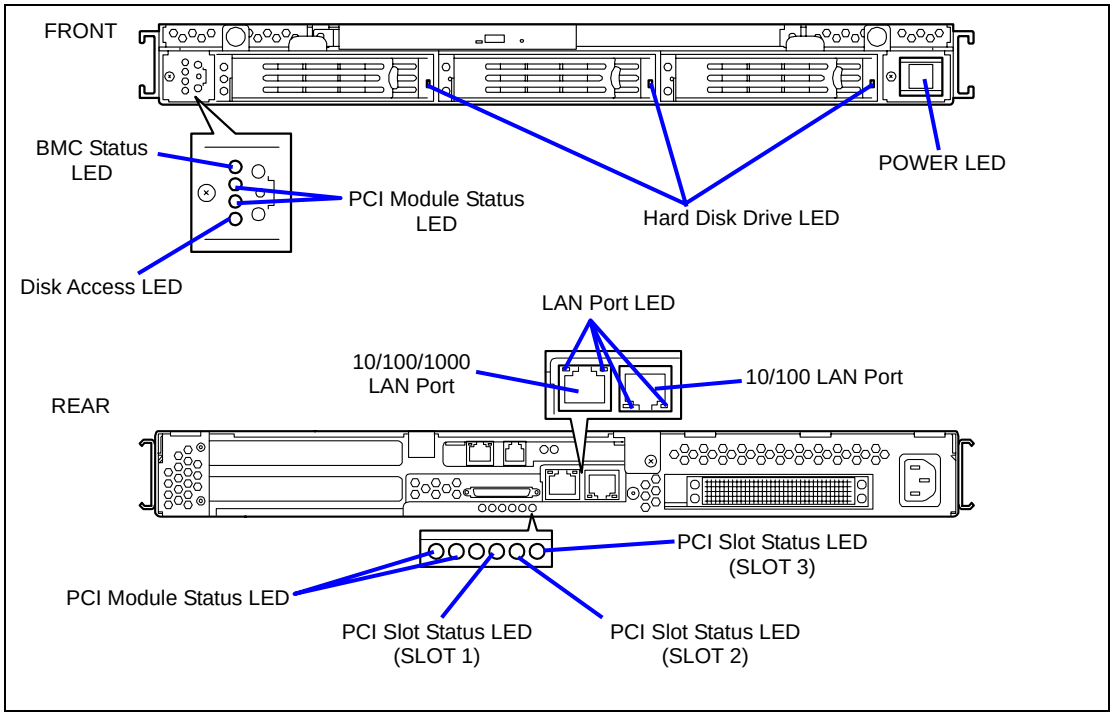
CPU Module Status LED

The CPU module has two LEDs. The status of CPU module is indicated by the combination of two LEDs.



CPU Status LED (Red)	CPU Status LED (Green/Amber)	Status/Action
Off	Off	Power off state The server is off-powered. Supply the electric power.
Red (On)	Off	The power is not supplied due to CPU module failure. Re-install the CPU module. If the same error persists, contact your service representative.
Red (Blink)	Off	Contact your service representative.
Off	Amber (On)	Operates in simplex mode. CPU operates normally, but does not perform lock step with partner CPU. Start the other CPU module to make the server fault-tolerant. If the same error persists, contact your service representative.
Red (On)	Green (On)	CPU module executes diagnosis.
Off	Green (On)	CPU module normally operates in dual mode.

PCI Module Status LED



BMC Status LED

The BMC Status LED indicates the status of the Baseboard Management Controller (BMC) installed on NEC Express5800/ft series.

The LED stays green while the server is running normally. If the LED is not green, there is something wrong with the server.

The table below shows indications of the BMC Status LED and their meanings.

TIPS: When you want to restart the server, perform a shutdown if the OS allows you to shut down the system. If not, perform a reset or forced shutdown, or you can restart the server by unplug and plugging the power cord.

LED	Status / Action
Red (On)	The BMC is not ready or may be failed. If updating of firmware is executed, wait at least 10 minutes. If updating of firmware is not executed and the LED goes on red for 10 seconds or longer, contact your service representative.
Green (On)	The BMC operates in duplex mode and the system is in safe state.
Green (Blink) - Duplex mode Amber (Blink) - Simplex mode	The system is in warning or critical state (e.g., thermal error or clock card failure). Check internal fans for dust or debris. Also make sure that the internal fan cables are firmly connected. If this error indication persists, contact your service representative.
Amber (On)	The BMC operates in simplex mode and the system is in critical state. Make the PCI module being offline to online state. If the same indication persists, contact your service representative.
Off	The server is off-powered. Check if the AC power cord is firmly connected. Also check if the power supply for the system is properly connected.

PCI Module Status LEDs (1 and 2) (1/2)

Disk Access LED

The PCI module has three LEDs.
Combined, the three LEDs show the status of the PCI modules and hard disks.

See “NAMES AND FUNCTIONS OF COMPONENTS” (page 2-7) for the locations of LEDs.

(1) Status LED 1 of both PCI modules are off

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Green	Green/ Off *	Green	Green/ Off *	Both PCI modules operate normally in duplex mode.	-
Green	Off	Amber	Amber	Some trouble occurred on a hard disk of the PCI module 1.	Reconfigure the hard disk mirror. (See “DISK OPERATIONS” in Chapter 3, Windows Setup and Operation) If the problem persists, contact your sales agent.
Amber	Amber	Green	Off	Some trouble occurred on a hard disk of the PCI module 2.	
Off	Off	Amber	Amber	AC power is not supplied to the PCI module 1. The PCI module 2 operates in simplex mode.	Check if the power cord is connected correctly. Check the condition of breaker and UPS. Check if the power unit of the PCI module 1 is connected correctly. Remount the PCI module 1. If the problem persists, contact your sales agent.
Amber	Amber	Off	Off	AC power is not supplied to the PCI module 2. The PCI module 1 operates in simplex mode.	Check if the power cord is connected correctly. Check the condition of breaker and UPS. Check if the power unit of the PCI module 2 is connected correctly. Remount the PCI module 2. If the problem persists, contact your sales agent.

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Green	Green/ Off *	Amber	Green/ Off *	i) There is an error in the option PCI board or the PCI module board connected or mounted on PCI module 1. ii) There is an error in the devices connected to the option PCI board connected or mounted on PCI module 1. (including the cable disconnection) iii) The LAN cable connected or mounted on PCI module 1 is disconnected.	Make sure that the option PCI board is properly mounted and cables are properly connected to the connecters of the PCI module or the option PCI board. Remount the PCI module 1. If the problem persists, contact your sales agent.
Amber	Green/ Off *	Green	Green/ Off *	i) There is an error in the option PCI board or the PCI module board connected or mounted on PCI module 2. ii) There is an error in the devices connected to the option PCI board connected or mounted on PCI module 2 (including the cable disconnection) iii) The LAN cable connected or mounted on PCI module 2 is disconnected.	Make sure that the option PCI board is properly mounted and cables are properly connected to the connecters of the PCI module or the option PCI board. Remount the PCI module 2. If the problem persists, contact your sales agent.
Amber	Amber	Amber	Amber	DISKs are performing mirroring (when mirroring by Disk Management).	Wait for the mirroring to be completed.
Amber	Amber	Green	Green/ Off *	DISKs are performing mirroring. (when mirroring by the RDR function)	Wait for the mirroring to be completed.
Green	Green/ Off *	Amber	Amber		

* DISK ACCESS LED illuminates green when hard disk is accessed.

Tips: When the status LED 1 is off, the colors of the status LED 2 indicate the following. You must be careful especially when detaching modules.

- Green: Unmounting the module has no effect on the system operation.
- Amber: Unmounting the module causes a system down.

(2) Status LED 1 of both PCI modules are red

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Off	Off	Off	Off	On standby (AC power is supplied through the cord, but the system has not been powered on yet.)	After turning on the power, wait for the OS to start. When the OS starts and duplex mode is established, the indications will return to normal. If they do not get back to normal, remount the CPU module. If the problem persists, contact your sales agent.
Green	Off	Off	Off	The PCI module 1 is performing diagnosis (Diag).	Wait for the OS to start. When the OS starts and duplex mode is established, the indications will return to normal.
Off	Off	Green	Off	The PCI module 2 is performing diagnosis (Diag).	Wait for the OS to start. When the OS starts and duplex mode is established, the indications will return to normal.

(3) Status LED of only PCI module 1 is red

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Off	Off	Amber	Amber	The PCI module 1 is on standby (The PCI module 1 has not been powered on yet.) The PCI module 2 operates in simplex mode.	Start the PCI module 1 from ft server utility (See “Maintenance of NEC Express5800/ft series” in Chapter 5). Remount the PCI module 1. If the problem persists, contact your sales agent.
Green	Off	Amber	Amber	The PCI module 1 is performing diagnosis (Diag). The PCI module 2 operates in simplex mode.	Wait for the PCI module 1 to start. When the PCI module 1 starts and duplex mode is established, the indications will return to normal.
Off	Off	Off	Off	Only the PCI module 1 is on standby (AC power is supplied through the cord, but the system has not been powered on yet.) AC power is not supplied to the PCI module 2.	Check if the power cord is connected correctly. Check the condition of breaker and UPS. Check if the power unit is connected correctly. Remount the PCI module 2. If the problem persists, contact your sales agent.

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Green	Off	Off	Off	The PCI module 1 is performing diagnosis (Diag). AC power is not supplied to the PCI module 2.	Wait for the OS to start. After the OS starts, check the status LEDs and then take the appropriate actions. If the problem persists, contact your sales agent.

(4) Status LED of only PCI module 2 is red

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Amber	Amber	Off	Off	The PCI module 2 is on standby (The PCI module 2 has not been powered on yet.) The PCI module 1 operates in simplex mode.	Start the PCI module 2 from ft server utility (See "Maintenance of NEC Express5800/ft series" in Chapter 5). Remount the PCI module 2. If the problem persists, contact your sales agent.
Amber	Amber	Green	Off	The PCI module 2 is performing diagnosis (Diag). The PCI module 1 operates in simplex mode.	Wait for the PCI module 2 to start. When the PCI module 2 starts and duplex mode is established, the indications will return to normal.
Off	Off	Off	Off	Only the PCI module 2 is on standby (AC power is supplied through the cord, but the system has not been powered on yet.) AC power is not supplied to the PCI module 1.	Check if the power cord is connected correctly. Check the condition of breaker and UPS. Check if the power unit is connected correctly. Remount the PCI module 1. If the problem persists, contact your sales agent.
Off	Off	Green	Off	The PCI module 2 is performing diagnosis (Diag). AC power is not supplied to the PCI module 1.	Wait for the OS to start. After the OS starts, check the status LEDs and then take the appropriate actions. If the problem persists, contact your sales agent.

DISK LED

A DISK LED shows the status of a hard disk that is mounted in a slot of the 3.5-inch hard disk drive bay. Combined, the disk LEDs on PCI modules 1 and 2 show the status of the hard disks.

PCI module 1	PCI module 2	Description	Action
Green/Off *	Green/Off *	The hard disk drives are mirrored and operating normally.	-
Green/Off *	Amber	Mirroring the DISKs by the RDR function.	Wait for the mirroring to be completed.
Green	Amber	Some trouble occurred on a hard disk of the PCI module 1. The hard disk drive in the PCI module 2 is running without mirror.	Reconfigure the hard disk mirror. (See "DISK OPERATIONS" in Chapter 3, Windows Setup and Operation) If the problem persists, contact your sales agent.
Amber	Green/Off *	Mirroring the DISKs by the RDR function.	Wait for the mirroring to be completed.
Amber	Green	Some trouble occurred on a hard disk of the PCI module 2. The hard disk drive in the PCI module 1 is running without mirror.	Reconfigure the hard disk mirror. (See "DISK OPERATIONS" in Chapter 3, Windows Setup and Operation) If the problem persists, contact your sales agent.
Amber	Amber	Mirroring DISK by Disk Management.	Wait until the mirroring is finished.

* The DISK LEDs becomes off (blinks) when the hard disk drive is accessed.

TIPS:

- When there are many accesses, the access LED will blink frequently, or seems to be off. Check if the LED blinks in green when the number of accesses decreases, or if it is green when there are no accesses anymore.
- When you power on NEC Express5800/ft series and the access LEDs does not light green, reinstall the hard disks. If the state remains unchanged, contact your service representative.

PCI Slot Status LED

The PCI module has three PCI Slot Status LEDs to indicate the status of PCI slot. The expansion PCI module has three LEDs as well.

LED	Status / Action
Red (On)	The PCI board is in offline state, or is failed. Check if the PCI board is correctly installed. If not, re-install the board. If the same indication persists, ask your service representative to replace the PCI board.
Amber (On)	The PCI board operates in simplex mode. Install the identical PCI board in the slot having the same slot number in the other PCI module.
Off	The PCI board operates in duplex mode. Or, the PCI slot contains no board, or off-powered. There is no problem if the PCI board operates in duplex mode. If no PCI board is installed, install the board correctly. If off-powered, turn the power on. If the same indication persists, contact your service representative.

LAN Port LED

Each PCI module has two LAN ports.

The table shown below describes the LAN port status.

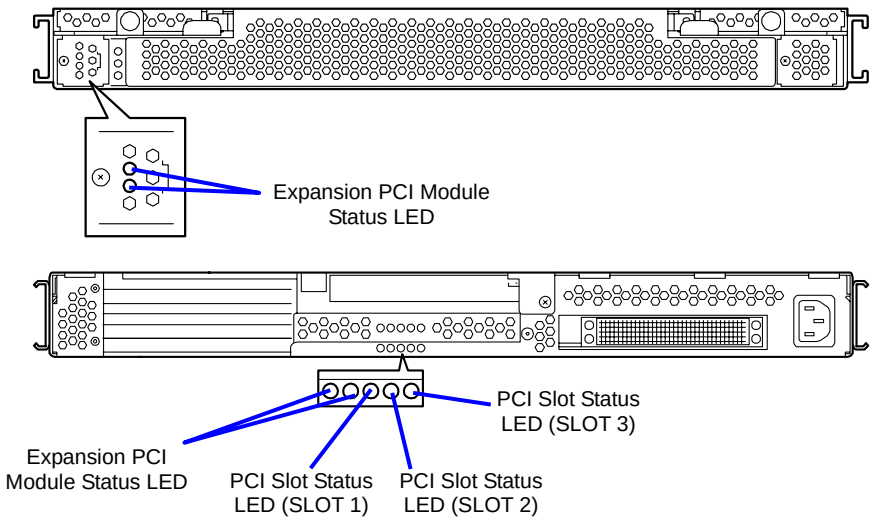
Green	Amber	Status / Action
On	Off	<10/100 LAN port> The power is normally supplied, and the port operates at 10Mbps. <10/100/1000LAN port> The power is normally supplied, and the port operates at 10Mbps or 100Mbps.
On	On	<10/100 LAN port> The power is normally supplied, and the port operates at 100Mbps. <10/100/1000LAN port> The power is normally supplied, and the port operates at 1000Mbps.
Blink	Off	<10/100 LAN port> Data is transmitted or received at 10Mbps. <10/100/1000 LAN port> Data is transmitted or received at 10Mbps or 100Mbps.
Blink	On	<10/100 LAN port> Data is transmitted or received at 100Mbps. <10/100/1000 LAN port> Data is transmitted or received at 1000Mbps.
Off	Off	The port is off-powered.

SMM Board Status LED

SMM Board Status LED indicates the status of SMM board.

Red	Amber / Green	Status / Action
On	Off	The SMM board is installed in PCI module and power is supplied, but the SMM board is in offline state or failed. Check if SMM board is correctly installed. If not, re-install the board. If the same indication persists, ask your service representative to replace the SMM board.
Off	Green (On)	The SMM board operates in duplex mode and in safe state.
On	Green (On)	Being tested or standby power is on.
On	Amber (On)	Being dumped.
Off	Amber (On)	The SMM board operates in simplex mode.
Off	Off	Power is not supplied.

Expansion PCI Module Status LED



Expansion PCI Module Status LEDs (1 and 2)

The expansion PCI module has two LEDs.

Combined, the two LEDs show the status of the expansion PCI modules:

LED	Status / Action
Red (On)	Expansion PCI module is faulty. Install the Expansion PCI module again. If the same indication persists, contact your service representative.
Red (On) on a module, and Green (On) on another module	Diagnostic test is in progress. Wait for a while.
Green (On)	The Expansion PCI module operates in duplex mode and the module is in safe state.
Amber (On)	The Expansion PCI module operates in simplex mode and the module is in critical state. Make the Expansion PCI module being offline to online state. If the same indication persists, contact your service representative.
Off	The server is off-powered. Check if the AC power cord is firmly connected. Also check if the power supply for the system is properly connected.

PCI Slot Status LEDs

To show the status of PCI board slots, each PCI module has three status LEDs.

LED	Status / Action
Red (On)	The PCI board is in offline state, or is failed. Check if the PCI board is correctly installed. If not, re-install the board. If the same indication persists, ask your service representative to replace the PCI board.
Amber (On)	The PCI board operates in simplex mode. Install the identical PCI board in the slot having the same slot number in the other PCI module.
Off	The PCI board operates in duplex mode. Or, the PCI slot contains no board, or off-powered. There is no problem if the PCI board operates in duplex mode. If no PCI board is installed, install the board correctly. If off-powered, turn the power on. If the same indication persists, contact your service representative.

BASIC OPERATION

This section explains the basic operation of the NEC Express5800/ft series.

Installing/Removing the Front Bezel

Install the server modules in the rack assembly, and then install the front bezel.

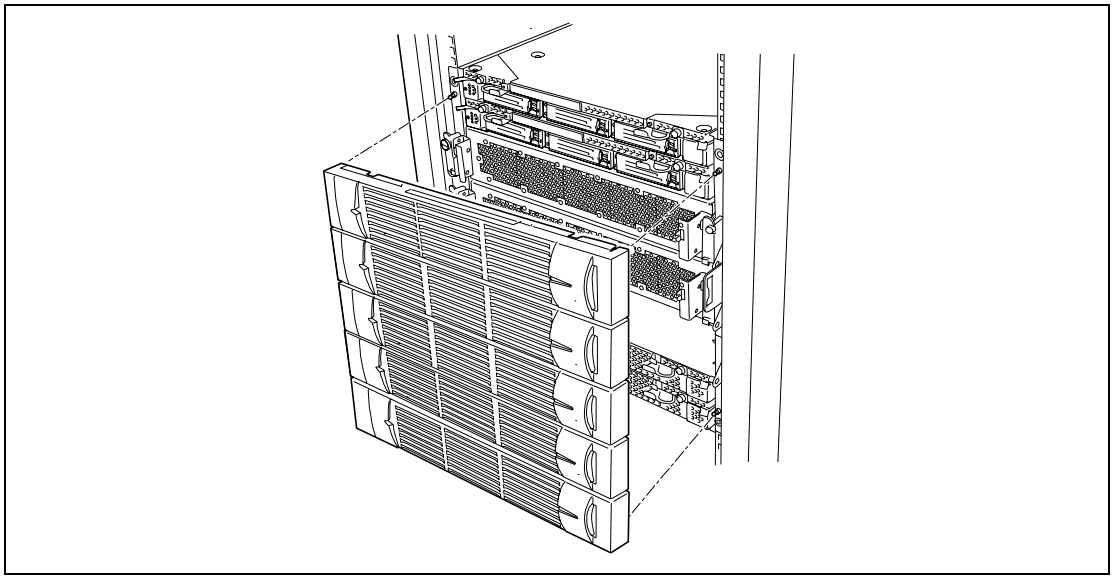
To handle the server module or components in it, remove the front bezel from the server.

> **IMPORTANT:** Request a maintenance engineer of your service representative having the expert knowledge on the server to install, remove, or replace the CPU module, PCI module, and expansion PCI module. NEC is not responsible for any machine or component defects or bad influences resulting from the operation of the server subject to the installation or removal made by yourself.

The front bezel covers the POWER switch and internal devices such as CD-ROM drive and hard disk drive of the server.

Installation

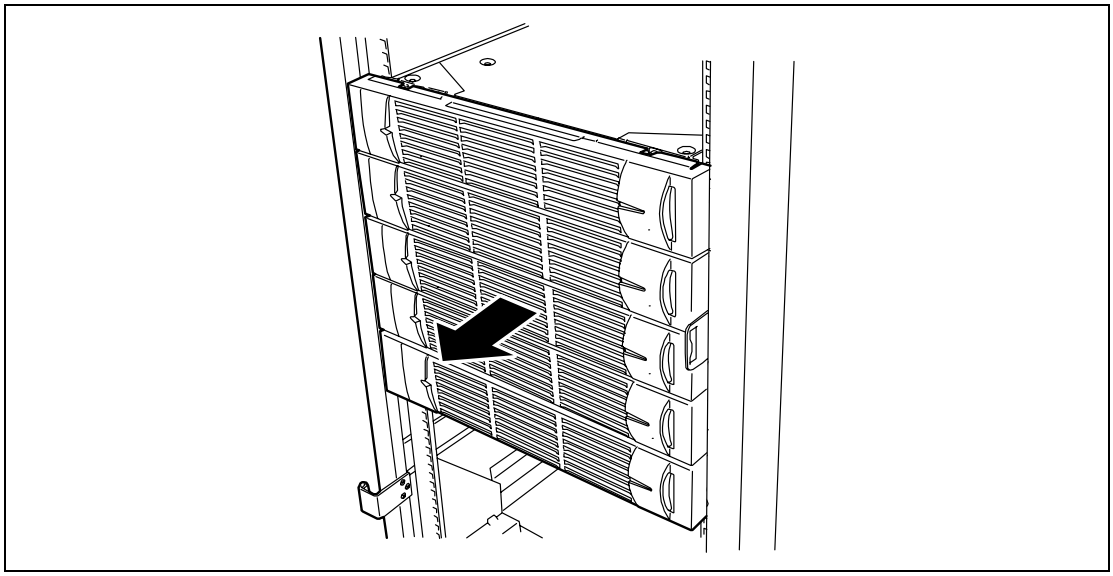
1. If the rack has a front door, open the front door.
2. Fit the clip of the front bezel to the ball stud of the chassis, and carefully push them in.



3. If the rack has a front door, close the front door.

Removal

1. If the rack has a front door, open the front door.
2. Hold both ends of the front bezel, pull them out together, and remove the front bezel.



Power ON

To power on NEC Express5800/ft series, press the POWER switch located on the front panel.

Follow the steps below to turn on the power.

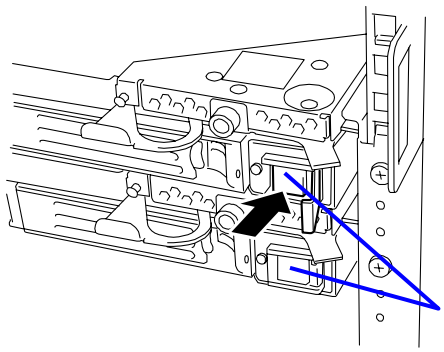
1. Power on the display unit and other peripheral devices connected to the server.

   CHECK: If the power cord is connected to a power controller like a UPS, make sure that it is powered on.

   NOTE: When NEC Express5800/ft series is powered on, BMCs between the two PCI modules are synchronized. (The BMC status LED on the secondary module blinks.) See Chapter 2 “LEDs” for details of the BMC status LED.

2. Remove the front bezel.
3. Confirm that the BMC status LED on both PCI modules are off and press the POWER switch which illuminates green and located on the front panel.

   After a while, the "NEC" logo will appear on the screen.



IMPORTANT:

- Do not turn off the power before the "NEC" logo appears.
- Before powering on, make sure that the BMC status LED on the both PCI modules are off and then press the power switch.

While the "NEC" logo is displayed on the screen, NEC Express5800/ft series is performing a power-on self test (POST) to check itself. For details, see "Power-On Self Test (POST)" described later in this manual. Upon the completion of POST, Windows Server 2003 will start.

Power OFF

Follow the steps below to turn off the power. If NEC Express5800/ft series is plugged to a UPS, see manuals included with the UPS or the application that controls the UPS.

1. Perform a normal shutdown from Windows Server 2003.

   The system will be powered off automatically. (Note: The POWER LED on the primary side will remain illuminating when the AC power is supplied.)

2. Power off all peripheral devices.

Power-On Self Test (POST)

Power-On Self Test (POST) is a self-test function stored on the motherboard of NEC Express5800/ft series.

When you power on the server, POST will start automatically to check the motherboard, memory, processor (CPU), keyboard, mouse, etc. It also shows startup messages for various BIOS setup utilities.



According to the factory default settings, the "NEC" logo appears on the display while POST is being performed. (To view POST's details, press **Esc**.)

TIPS:

- You can view POST screen from the beginning without the need to press **Esc** by changing the BIOS parameter.
  Run the BIOS setup utility and enable [Boot-time Diagnostic Screen] in the [Main] menu (see Chapter 4).
- You can view the test items and details from a management PC where NEC ESMPRO Manager is installed.

You don't always need to check POST details. You will need to check messages when:

- You install a new NEC Express5800/ft series.
- A failure is suspected.
- The display unit shows an error message.

Flow of POST

This section walks you through how POST is performed.

1. When you power on the system, one selected CPU/PCI module will start up.

   POST will be performed on this selected CPU/PCI module.

2. Memory check starts.

   A message appears at the upper left of the screen to show that the basic and expanded memories are being counted. The memory check may take a few minutes to complete depending on the server's memory size. Likewise, it may take about one minute for the screen to appear when the server is rebooted.

   Note that if you have replaced the PCI module, the server will perform a reset of the MAC address, then reboot itself before the memory check.

3. The server starts processor check, IO check, and initialization.

   Several messages appear: they show the ID of the selected CPU/PCI modules, information on the processor, detection of the keyboard and mouse, etc.

4. A message appears at the lower left of the screen, prompting for startup of the BIOS setup utility "SETUP."

   ```
   Press <F2> to enter SETUP
   ```

   You will need to start it when you want modify the configuration for using the server. Unless this message appears together with an error message, you don't need to start the utility to modify the configuration. (If you wait for a few seconds, POST will go on automatically.)

   To start the SETUP utility, press **F2** while the above message is displayed. For setting and parameter functions, see the section of BIOS setup.

   When SETUP is completed, the server will reboot itself automatically and perform POST.

5. A message appears prompting for startup of SCSI BIOS setup utility.

   When a built-in SCSI controller is detected, a message will appear prompting for startup of SCSI BIOS setup utility. (If you wait for a few seconds, POST will go on automatically.)

   If you press **Ctrl** + **Q**, the SCSI BIOS setup utility will start. For setting and parameter functions, see the section on SCSI setup.

   You will need to use this utility, for example, when you have changed the server's internal SCSI device connections. However, you usually don't need to use it.

   When SETUP is complete, the server will reboot automatically and perform POST again.

   If multiple SCSI controller boards are mounted on the PCI bus, the SCSI BIOS startup message will appear for these boards in numerical order (PCI #1, PCI #2, and PCI #3).

6. The screen shows SCSI ID numbers used by the connected SCSI devices.

7. Upon completion of POST, the password entry screen appears prior to OS startup.

   The password entry screen will appear after the normal termination of POST only if you have set a password in the BIOS setup utility "SETUP."

   You can enter a password up to three times. If you enter an incorrect password three times, the startup will be unsuccessful. In this case, turn off the power and then turn it on again after waiting 30 seconds to boot the server.

   IMPORTANT: Do not set a password before installing the OS.

8. Upon completion of POST, the OS will start up.

Behavior at Occurrence of Error

If POST or OS startup does not finish normally, the server will reboot itself automatically.

At the time of reboot, it will select the other CPU/PCI module and run POST or OS startup.

In this manner, the server retries POST or OS startup with different combinations of CPU/PCI modules. If POST does not finish normally with any combinations, the server will stop with the state of DC OFF.

While performing retries, the server displays or registers the error types.

For details of error messages, see Chapter 7 "Troubleshooting."

POST Error Messages

When the server detects an error during POST, the server displays an error message on the display unit.

IMPORTANT: Before you contact your sales agent, write down the error messages. This information is useful to your service representative.

Floppy Disk Drive

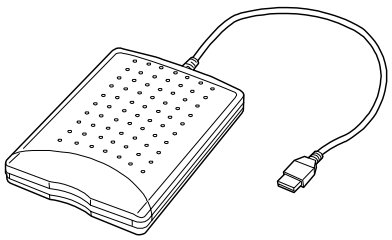
A USB floppy disk drive is attached to the main unit. It allows you to read and write (save) data using floppy disks.

The USB floppy disk drive accepts the following types of floppy disks:

- 2HD floppy disk (1.44MB)
- 2DD floppy disk (720KB)

IMPORTANT: USB floppy disk drive

When installing the server in rack assembly, connect the USB floppy disk drive to the lower side of the server by using the rail coming with the server. Ask a maintenance engineer of your service representative having the expert knowledge on the server to do the installation, removal and replacement procedures.



Drive Letter of Floppy Disk Drive

The drive letter will change when the primary PCI module is switched to the standby PCI module while the Windows operating system is in operation. The drive letter of the floppy disk will be determined as follows:

"A" will be assigned to the floppy disk drive for the PCI module that is operating as the primary PCI module during Windows operating system boot-up. "B" will be assigned to the floppy disk drive for the standby PCI module.

Ex) If a floppy disk drive was connected for the first time while the primary PCI module is group 1.

Primary PCI module
PCI module (for group 1): A drive
PCI module (for group 2): B drive

IMPORTANT: In the event that the active PCI module switches to the standby PCI module due to a failure while the system is in operation, the floppy disk drive letter will change at the point PCI module switches to the standby module.

Insert/Remove Floppy Disk

Before inserting a floppy disk into the drive, make sure that NEC Express5800/ft series is on and that the drive's USB cable is connected to the USB connector of the server.

Insert a floppy disk into the drive firmly with the label side up and its protective shutter facing the drive.

TIPS:

- If you insert an unformatted disk, you will see a message that the disk cannot be read or that needs formatting. To format a floppy disk, see your OS manual.
- If you power on or restart NEC Express5800/ft series with a floppy disk left in the drive, the server will access the floppy disk to start the system. Unless a system exits on the FD, the server will be unable to start.

To remove a floppy disk from the drive, press the eject button.

TIPS: Before removing a floppy disk, make sure that the access LED is off. If you eject a floppy disk while the LED is on, the stored data could be damaged.

Use of Floppy Disk

You may need to store important data on floppy disks. Since the floppy disk is a very delicate medium, you must handle it with extra care:

- Push the floppy disk gently into place.
- Attach the label on a proper position.
- Do not use a pencil or ballpoint pen to write on the disk.
- Do not open the protective shutter.
- Do not use the floppy disk in a dusty place.
- Do not place anything on the floppy disk.
- Do not leave the floppy disk in a place that is subject to direct sunlight or high temperatures (e.g., near a heater).
- Keep away from cigarette smoke.
- Do not leave the floppy disk near water or chemicals.
- Keep away from magnetic objects.
- Do not clip disks. Be careful not to drop.
- Store floppy disks in a protective case where they are kept away from magnetic waves or dust.
- To prevent data from being erased accidentally, the floppy disk has a write-protect notch. When the disk is write-protected, you can read data, but you cannot write the data or format the disk. It is recommendable to write-protect floppy disks that contain important data. To write-protect a floppy disk, slide the write-protect notch located on its back.
- The floppy disk is a very delicate storage medium. Dust or changes in temperature could cause data to be lost. Data loss could also be caused by faulty operation and computer trouble. To avoid such possible data loss, it is recommendable to back up important data regularly. (Be sure to make back-up copies of the disks that are included with NEC Express5800/ft series.)

CD-ROM Drive

NEC Express5800/ft series has a CD-ROM drive on the front panel. It is a device used to read data from a CD-ROM (compact disc read-only memory). Compared to a floppy disk, a CD-ROM allows for larger volume and fast data readout.

⚠ CAUTION

Observe the following instructions to use the server safely. There are risks of a burn, injury, or damage to physical assets. For details, see “PRECAUTIONS FOR SAFETY” in Chapter 1.

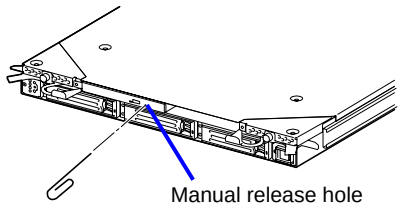
- Do not leave the CD tray ejected.

About the CD-ROM drive of NEC Express5800/ft series

Each PCI module contains a single CD-ROM drive in NEC Express5800/ft series, but only the CD-ROM drive on the primary side can be used.

When You Cannot Eject a CD-ROM

When you cannot eject the CD-ROM by pressing the eject button, follow the steps below to eject it:



1. Power off the server.
2. Use a metal pin of about 1.2 mm in diameter and 100 mm long (alternatively, you can use a fairly large paper clip after straightening). Insert it gently into the manual release hole located to the right of the eject button until the tray is ejected.

   IMPORTANT:
   - Do not use a toothpick, plastic pin, or other breakable objects.
   - If you cannot eject the CD-ROM by following the steps above, contact your sales agent.

3. Hold the tray and pull it out.
4. Take out the CD-ROM.
5. Push the tray back.

Use of CD-ROM

Observe the following when you use a CD-ROM on NEC Express5800/ft series:

- As for a disk such as a noncompliant "copy-protected CD," we shall not guarantee that you can use a CD player to play it with this server.
- Be careful not to drop the CD-ROM.
- Do not bend or place anything on the CD-ROM.
- Do not attach labels on the CD-ROM.
- Do not touch the signal side (blank side).
- Place the CD-ROM gently on the tray with the printed side up.
- Do not scratch, or use a pencil or ballpoint pen to write on the CD-ROM.
- Keep away from cigarette smoke.
- Do not leave the CD-ROM in a place that is subject to direct sunlight or high temperatures (e.g., due to a heater).
- If the CD-ROM gets dirty with dust or fingerprints, wipe it gently from its center to edge with a dry soft cloth.
- When you clean the CD-ROM, use a CD cleaner. Do not use a record cleaner (spray), benzine, or thinner.
- Store the CD-ROM in a protective case when not in use.

(This page is intentionally left blank.)

Chapter 3

Windows Setup and Operation

This chapter describes setup procedures to make NEC Express5800/ft series ready for use.

DISK OPERATIONS

NEC Express5800/ft series duplicates disks to secure data by using “Disk Management” or the “Rapid Disk Resync (RDR) function”. This section describes operations such as configuration of dual settings to disks and replacement of disks.

IMPORTANT:

On the disks containing the OS, it is recommended to create only the system partition. To create a partition other than a system partition on the disk with the OS, note the following:

If you reinstall the OS, the entire disk will be cleared. If there is any data partition other than the system partition, the data must be backed up before reinstalling the OS.

Operations differ depending on the model of NEC Express5800/ft series. Choose the suitable procedure:

- **Models that do not support the RDR (Rapid Disk Resync) function:**
  Go to “Disks Operations Using Disk Management” (page 3-3).

- **Models that support the RDR (Rapid Disk Resync) function:**
  Skip to “Disk Operations Using the RDR (Rapid Disk Resync) Function” (page 3-15).

Disks Operations Using Disk Management

Disk Management

NEC Express5800/ft series (which does not support the RDR function) ensures reliability by executing software mirroring to hard disk volumes using Windows. Use Windows' "Disk Management" to manipulate volumes.

Refer to the online help for the operating procedures of "Disk Management".

Steps to refer to the help of operating procedures:

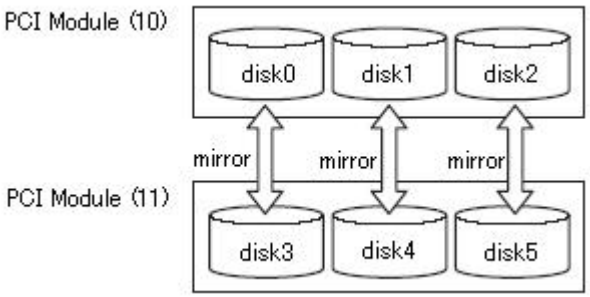
1. Click [Start] - [Help and Support].
2. Select [Disks and Data] from the topics on the help.
3. Select [Managing Disks and Volumes] - [Disk Management] - [How To…], then check the operating procedures.

Hard Disk Configurations that can be built on the NEC Express5800/ft series

In the NEC Express5800/ft series, all volumes need creation of mirror disks. You can create mirror disks only on the dynamic simple volume as shown in the table below.

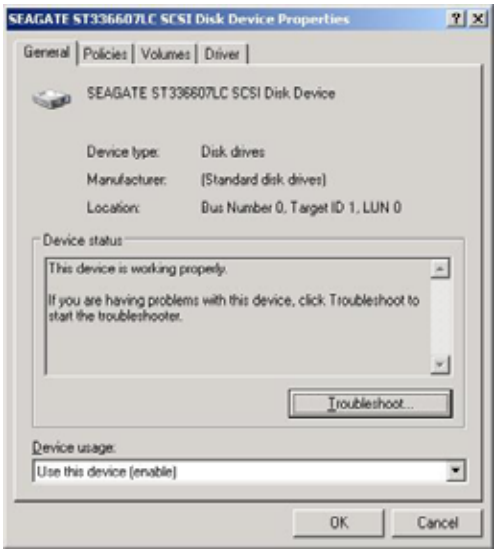
Volume type	Can/cannot be built
Dynamic simple volume	√
Dynamic span volume	–
Dynamic mirror volume	–
Dynamic stripe volume	–
Dynamic RAID5 volume	–

Create mirror disks by selecting disks that are in the same slot of the SCSI enclosure. For example, if the hard disks are positioned as shown in the table below, define hard disks 0 and 3, hard disks 1 and 4, and hard disks 2 and 5 as mirrored pairs.



The pairs of mirror disks as shown above can be created by selecting hard disks whose target IDs are identical in the disk properties, which are displayed through [Disk View]. The following explains how to confirm the target ID:

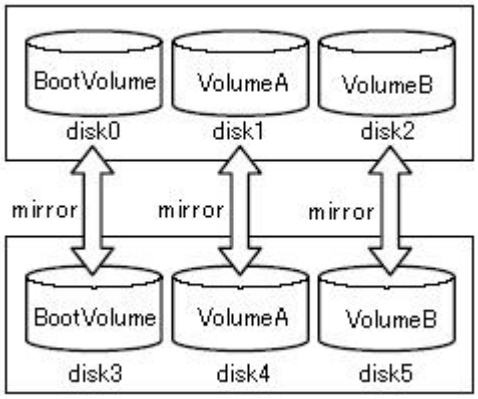
1. Click [Start] → [Administrative Tools] → [Computer Management]. The [Computer Management] window appears.
2. Click [Disk Management] under [Storage] in the console tree.
3. Right-click the disk and point to Properties to confirm the target ID. The target ID in the example shown here is “1”.



4. Similarly, confirm the target IDs of the other disks.

Disk No	Target ID
Hard disk 0	0
Hard disk 1	1
Hard disk 2	2
Hard disk 3	0
Hard disk 4	1
Hard disk 5	2

When disk numbers and target IDs are matched as shown above, define hard disks 0 and 3, hard disks 1 and 4, and hard disks 2 and 5 as mirrored pairs, and add mirror volumes.



Configuring and Breaking Mirror

This section describes the procedures to configure and break the mirror of hard disk volumes using Disk Management.

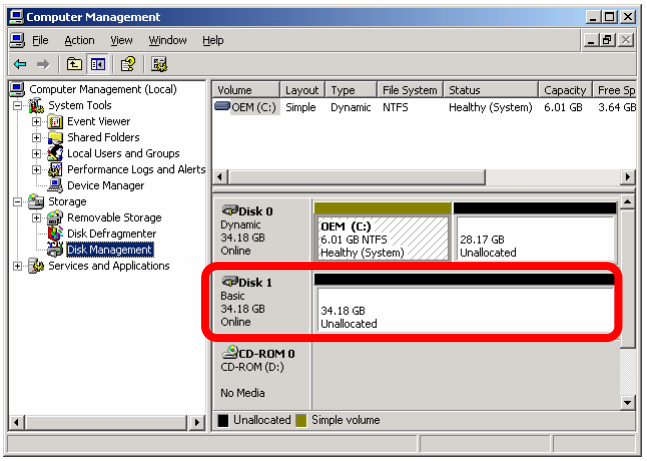
Configuring mirror

Follow the procedures below to configure a volume mirror.

IMPORTANT:

Set mirror to the disks whose Target IDs are identical.
For details, see “Hard Disk Configurations that can be built on the NEC Express5800/ft series (page 3-3).”

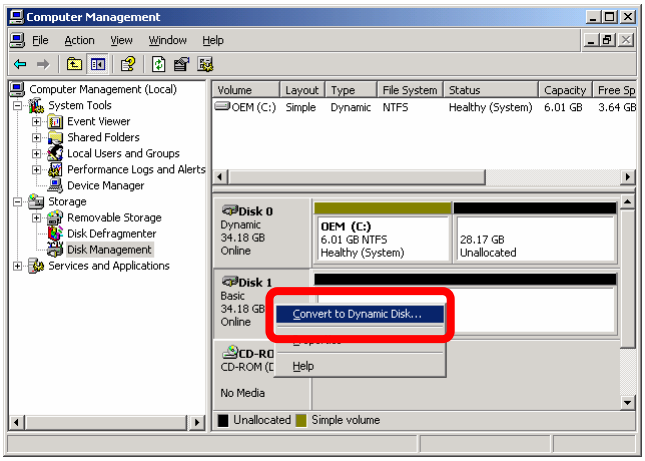
1. Click [Start] - [Administrative Tools] then [Computer Management].
   The [Computer Management] dialog box will appear.
2. Click [Disk Management] under [Storage] in the console tree.
   The [Disk Management] window will appear on the right panel.
3. Insert a new disk. The disk will appear on the [Disk Management] window.



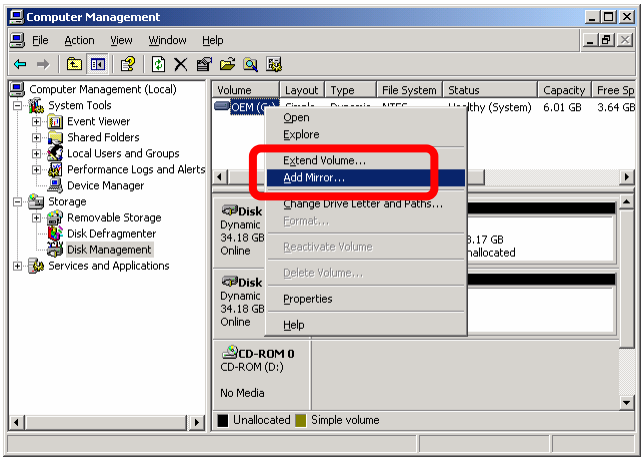
IMPORTANT:

- If the status of the disk is “Not Initialized”, right-click the disk and initialize it.
- If [Foreign] appears, right-click the disk and execute [Convert to Basic Disk…].

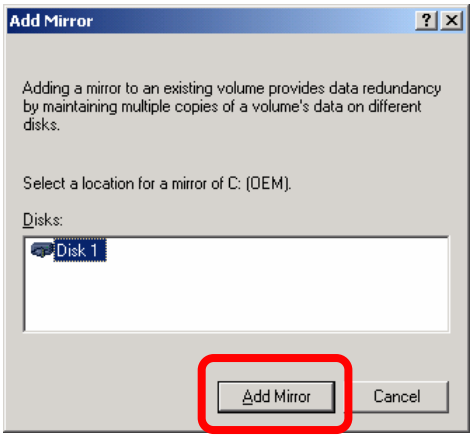
4. Select and right-click a disk, and then execute [Convert to Dynamic Disk…].
On the [Convert to Dynamic Disk] dialog box, select the disk and click [OK].



5. Right-click the volume of the dynamic disk to mirror and click [Add Mirror…].



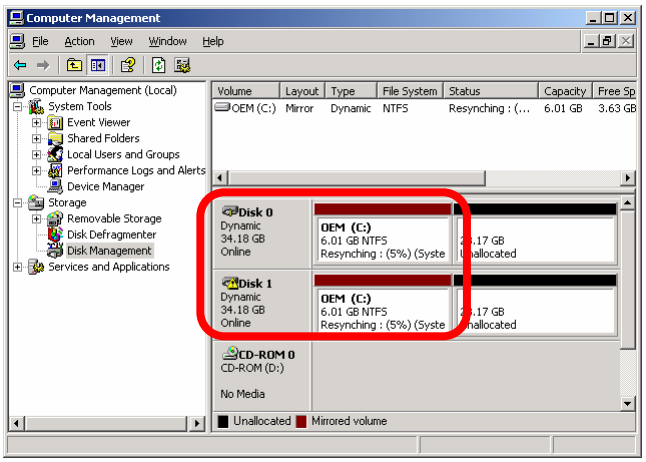
6. On the [Add Mirror] dialog box, select the disk to mirror and click [Add Mirror].



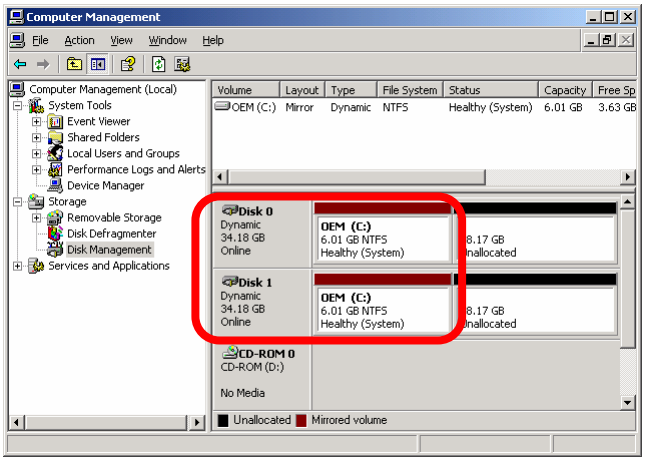
IMPORTANT:

- Clicking [Add Mirror] displays the [Logical Disk Manager] dialog box, but there is no problem. Click [OK].
- If the server is rebooted during mirror generation, mirroring will not be completed. Do not reboot the server until the mirroring process is completed.

7. The volume status changes to "Resynching".



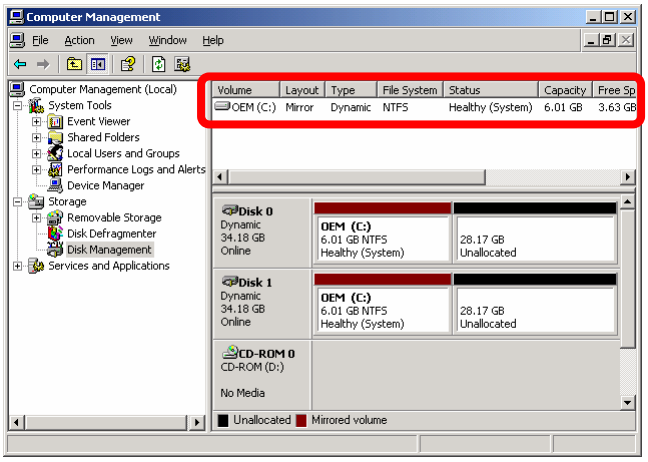
8. The mirror configuration is completed if the volume status changes from "Resyching" to "Healthy".



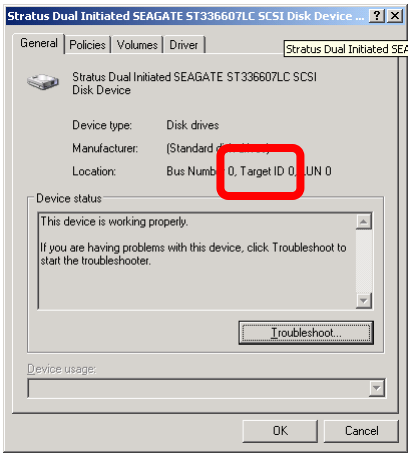
Confirming if Paired Disks are Mirrored Properly

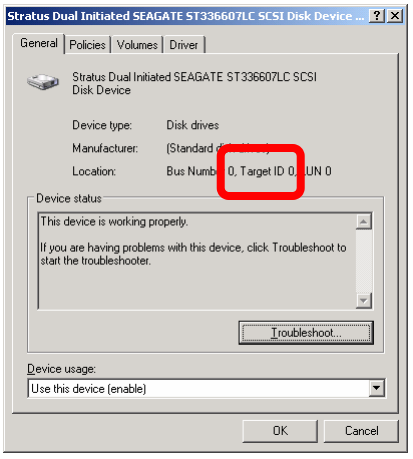
Check the following to confirm that the mirror is configured properly:

- Is disk mirroring completed successfully?
  Disk mirroring is completed properly if the volume layout is [Mirror], and the status is [Healthy] on the [Disk Management] window.



- Is the mirror configured on the disks of the proper position?
  On the [Disk Management] window, right-click the mirrored disks and select [Properties]. Click the [General] tab and check if the Target IDs are identical. (In the case below, the Target ID is “0”.)





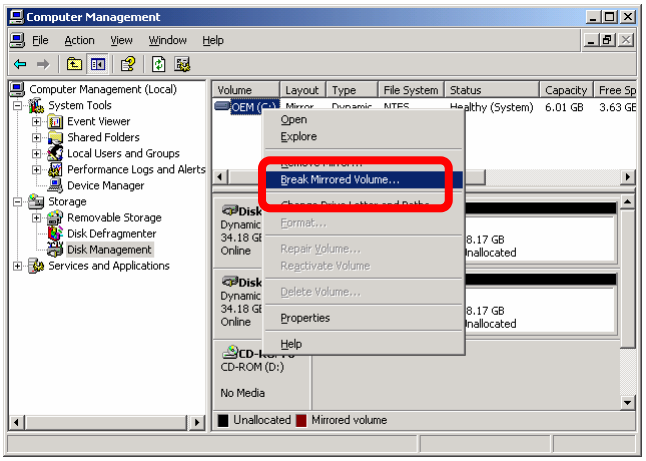
Breaking mirror

Follow the procedures below to break the mirror of volumes.

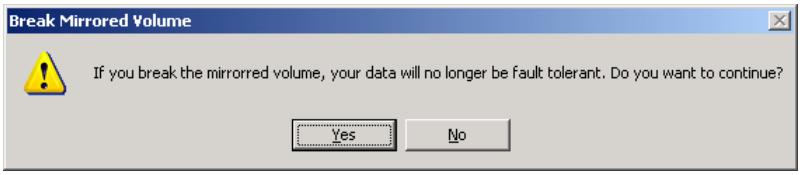
The procedures to break a mirror on C drive are discribed here.

1. Click [Start] - [Administrative Tools] - [Computer Management]. The [Computer Management] window will appear.

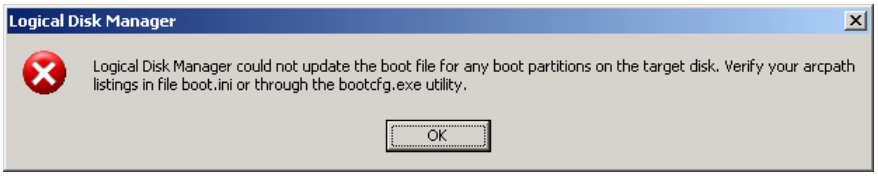
2. Right-click the volume of the dynamic disk whose mirror is to be broken and click [Break Mirrored Volume…].



3. Click [Yes] on the [Break Mirrored Volume] dialog box.

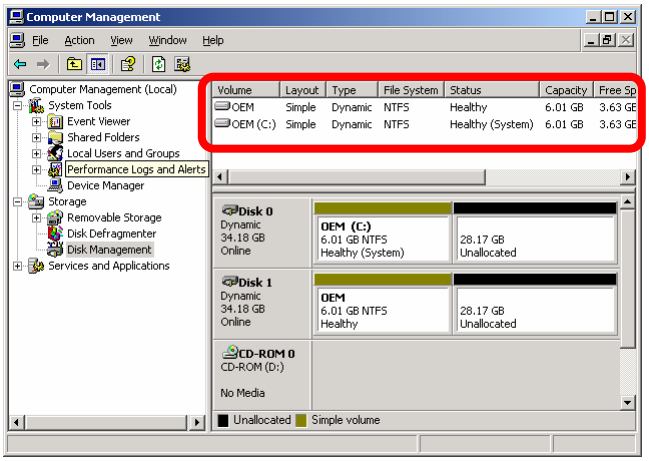


4. Click [OK] on the [Logical Disk Manager] dialog box. (This dialog box is not displayed for data volume.)



5. The mirror is broken and the volumes will be converted to simple volumes.
   In the figure on the right, the status of the volumes are as follows:

   [System Volume]
   Volume: OEM(C:), Status: Healthy (System)
   [Broken Volume]
   Volume: OEM, Status: Healthy



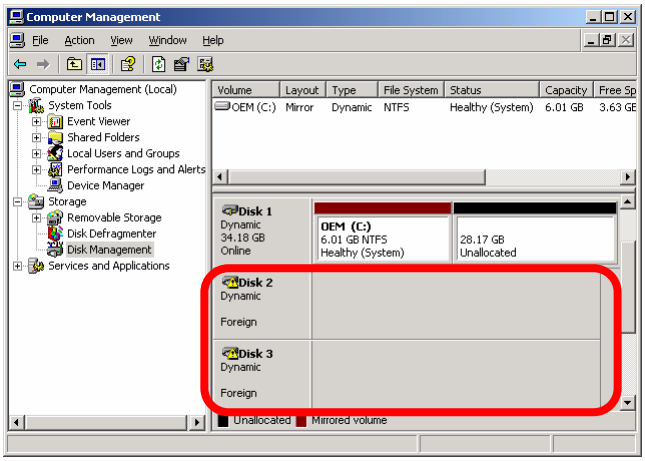
Importing Data Disks

This section describes a procedure to import a data disk using Disk Management.

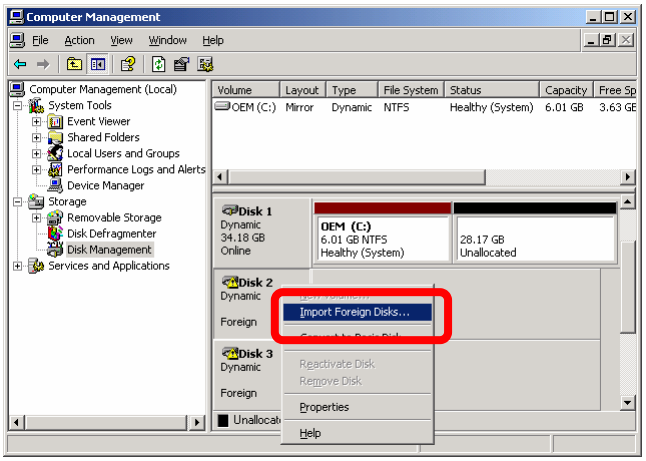
IMPORTANT: If you import the disk used as a boot disk on another system, it becomes impossible to boot from the disk.

1. Insert the disk to import.

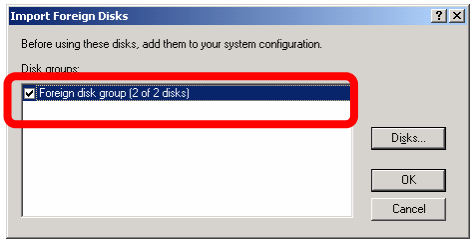
2. Foreign Dynamic Disk is displayed on [Disk Management].
   In the figure on the right, Disk 2 and Disk 3 are the inserted disks.



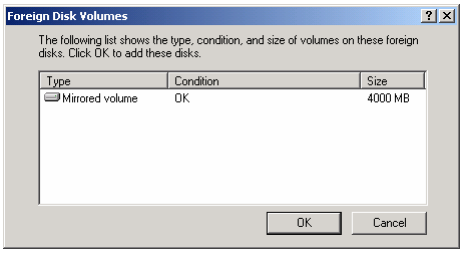
3. Right-click the disk to import and select [Import Foreign Disks…].



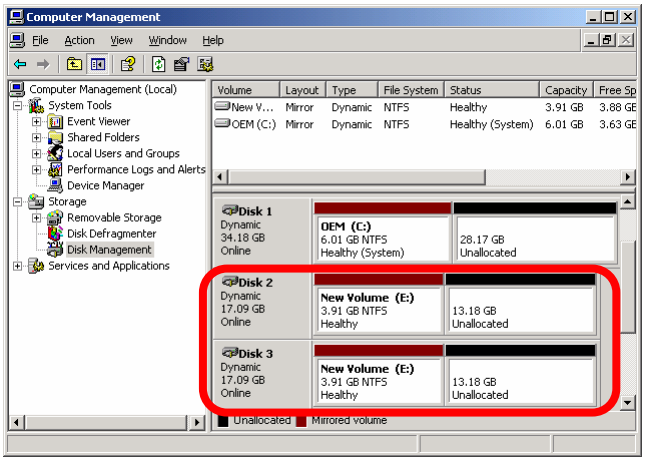
4. In the [Import Foregn Disks] dialog box, select the disk group to import and click [OK].



5. In the [Foreign Disk Volumes] dialog box, check the volumes to import, and click [OK].



6. The disk import is completed if the disk status changes from “Foreign” to “Online”.



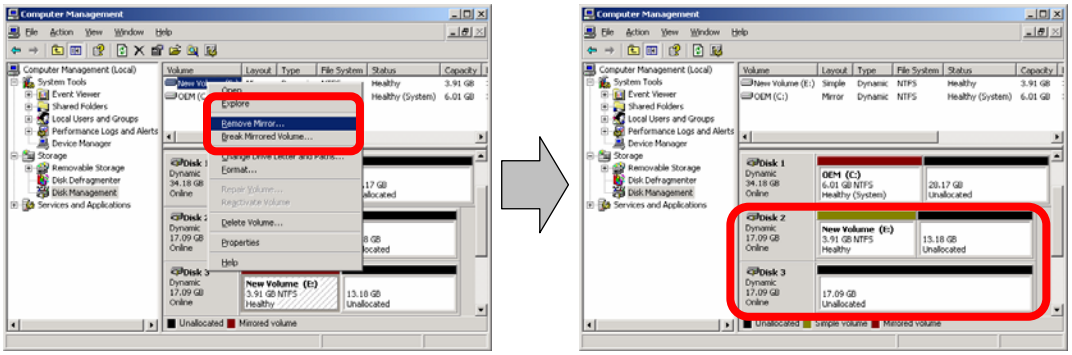
Extending Data Volume Size

This section describes a procedure to extend a volume size using Disk Management.

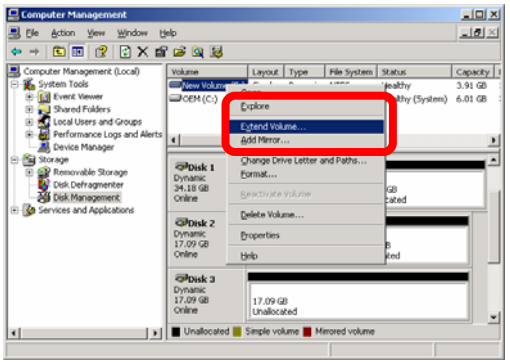
IMPORTANT:

- It is not possible to extend boot volume.
- As it is not possible to extend mirror volume, a mirror volume is extended in the following order: [Remove Mirror] - [Extend Volume] - [Add Mirror].

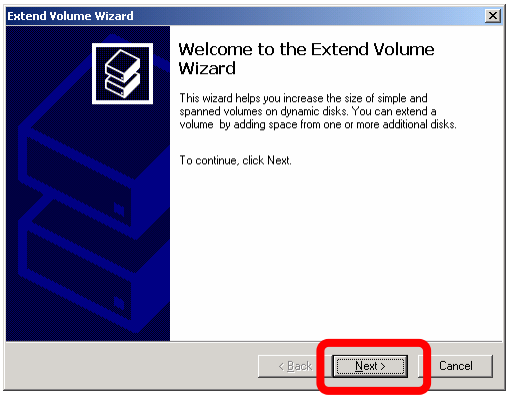
1. Remove the mirror of the volume you want to extend, and make it a simple volume.
(In the case below, the mirror of the volume (E:) is removed to extend the volume (E:).)



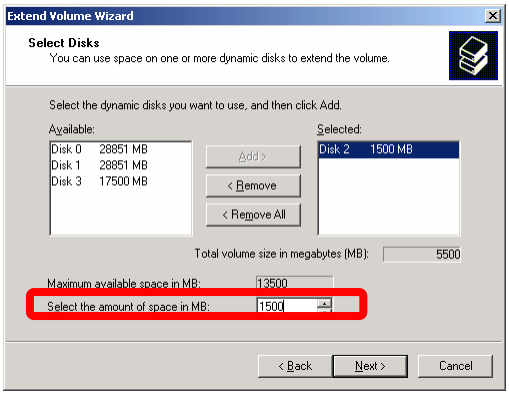
2. Right-click the volume to be extended and click [Extend Volume…].



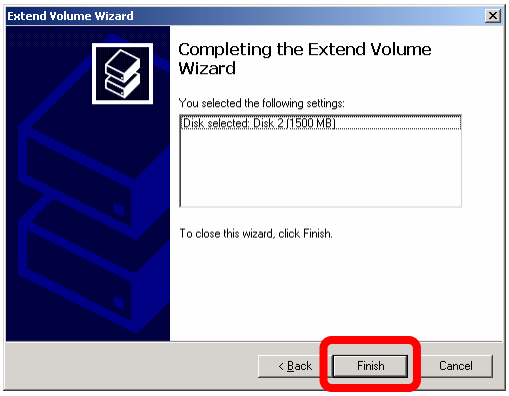
3. When the [Welcome to the Extend Volume Wizard] dialog box of the Extend Volume Wizard appears, click [Next].



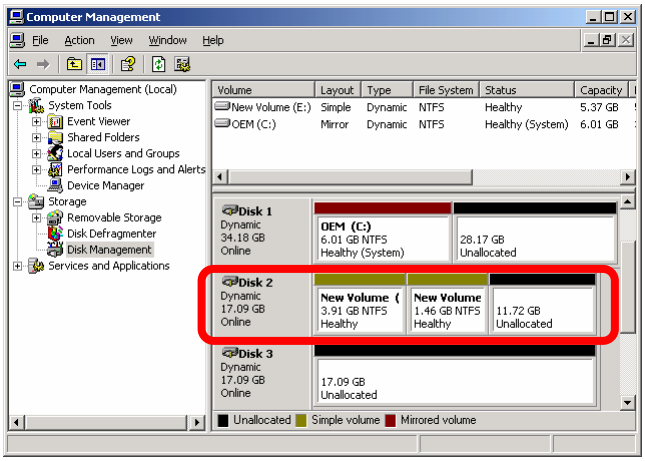
4. On the [Select Disks] dialog box, enter the amount of space to extend and click [Next]. (In this case, 1500MB is added.)



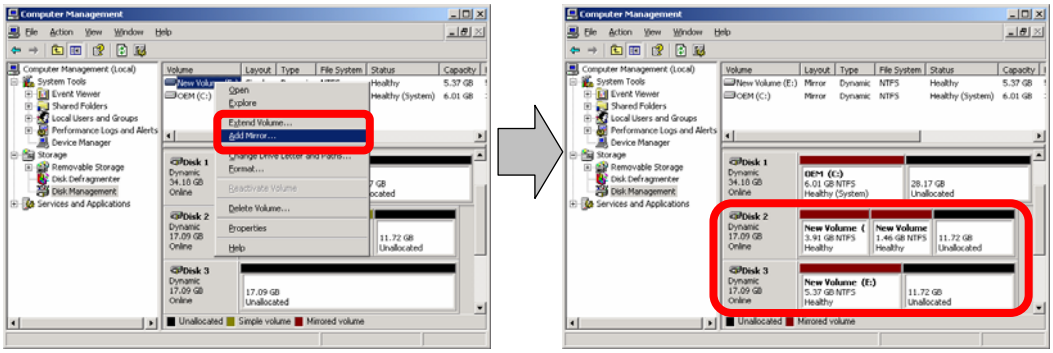
5. Check the settings on the [Completing the Extend Volume Wizard] dialog box and click [Finish].



6. The size of the volume is extended.



7. Configure the mirror of the extended volume.

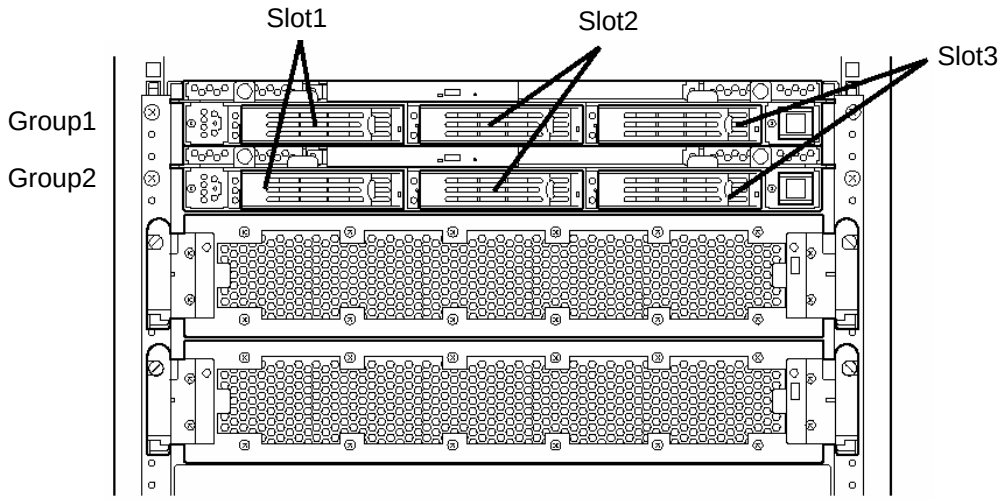


Disk Operations Using the RDR (Rapid Disk Resync) Function

RDR (Rapid Disk Resync)

Models supporting the RDR function secure reliability by making disks duplexed per disk using the ft control software's RDR function. Duplexing disks by the RDR function enables the disks to be resynchronized in a short period of time when their mirror has been broken due to causes such as PCI module replacement

Setting RDR to disks duplicates the disks of paired slots as shown in the figure below and Windows (ex. Disk Management and Device Manager) recognizes a paired disk as a single virtual disk.



Corresponding slots for mirroring process

[Paired slots]

Corresponding slots	Virtual disk name given by the RDR Utility
PCI module#1 Slot 1 ⇔ PCI module#2 Slot 1	RDR Virtual Disk 1
PCI module#1 Slot 2 ⇔ PCI module#2 Slot 2	RDR Virtual Disk 2
PCI module#1 Slot 3 ⇔ PCI module#2 Slot 3	RDR Virtual Disk 3

Note: In the above table, the PCI module names correspond to the following modules:
PCI module (for Group1): PCI module#1
PCI module (for Group2): PCI module#2

[Cautions for using the RDR function]

1. RDR can be set only to the disks inserted into the built-in slots of NEC Express5800/ft series.
2. Be sure to specify RDR to all disks inserted to the built-in slots and make duplex settings.

3. RDR can be set only to basic disks.
   If a span volume or stripe volume is needed, make settings of RDR to a basic disk and then change the disk to a dynamic disk from [Disk Management].
4. The disks to set RDR must have the same capacity and must be new or physically formatted. (For physical format, refer to "SCSI BIOS ~ Fast!UTIL ~" in Chapter 4 "System Configuration" and perform Low-Level Format using SCSI Disk Utility.)
5. The disks which RDR has been set can only be used in the system with the ft control software ver.3.0 or later.
6. If the system is shut down (or restarted) while the mirror is broken, or a long time (30 hours or longer) has passed after the mirror is broken, the mirror resynchronization target will be the entire disk.
   For example, if the mirroring has been broken due to a PCI module failure, when you shut down the system and replace the PCI module in such a state, the entire area of the disk needs to be resynchronized.

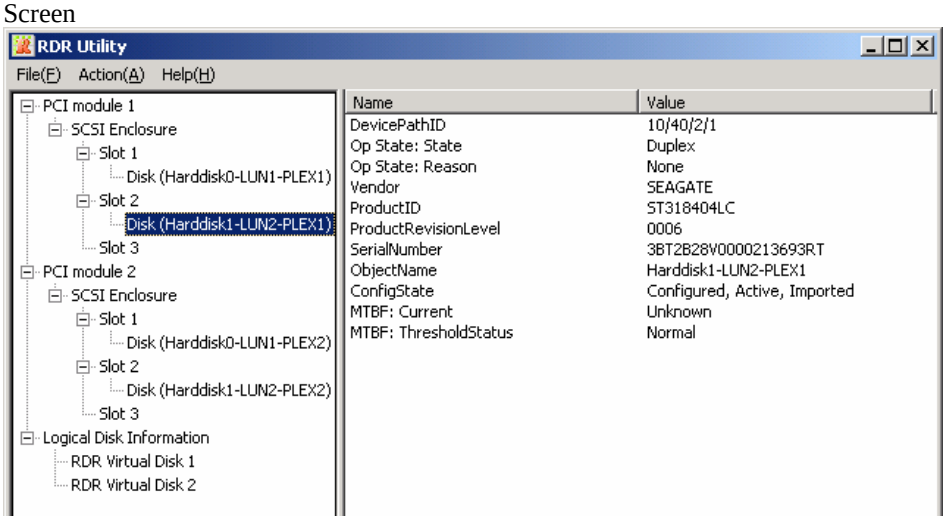
Configuring and Removing Duplexed Setting of Disks by the RDR Function

This section describes how to make disks duplex and how to remove the settings by using the RDR function. To use the RDR function, use [RDR Utility].

About RDR Utility

- Starting RDR Utility
  From [Start], select [All Programs] then [RDR] and click [RDR Utility] to start [RDR Utility].

- Screen



Note: In RDR Utility, the PCI module names correspond to the following modules:
PCI module 1: PCI module (for Group1)
PCI module 2: PCI module (for Group2)

[Left frame]
The tree shows disks inserted to the built-in slots and virtual disks (RDR Virtual Disks) created by RDR. On the models supporting RDR, right-click a disk on the tree to display the menu for setting RDR. By looking at the tree, you can know which disk corresponds to which disk of the Windows' [Disk Management] and whether RDR is set to the disk.

For example, in the case of the disk highlighted in the figure above:

Disk (Harddisk1—LUN2—PLEX1)
(1) (2) (3)

(1) Corresponds to the number of Windows' [Disk Management]. In this example, this disk is the Disk1 on [Disk Management].
(2) Corresponds to the number of a virtual disk created by RDR setting. In this example, this disk is a disk which makes up the RDR Virtual Disk 2 (only appears for disks with RDR setting).
(3) This section appears only for disks with RDR setting.

[Right frame]
The properties of the disk selected in the left frame is shown.
In the figure above, the properties of the disk inserted to the PCI module for Group1's Slot 2.

IMPORTANT:

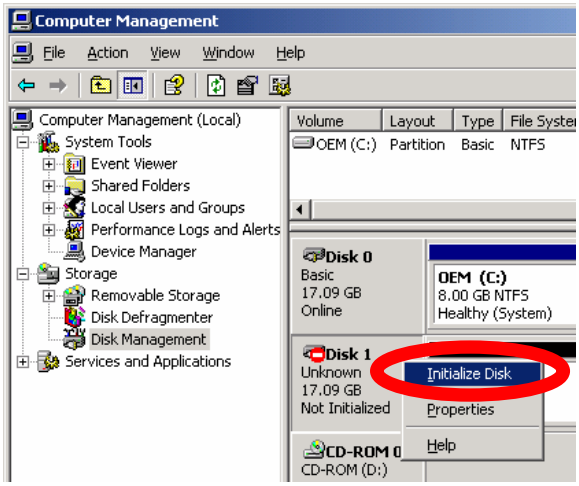
The [RDR Utility] display is not updated automatically. Therefore, update it by clicking [Refresh(R)] from [Action(A)] on the menu or pressing F5 after performing operations to disk such as inserting/removing a disk, specifying/removing the RDR setting.

Making disks duplex by RDR

The following describes the procedure to set duplex configuration to disks by RDR.
In this example, the disks of the Slot 2 of the PCI modules for Group1 and Group 2 are duplexed.

1. Insert a new disk to a built-in slot.
(In this example, a disk is inserted to the Slot 2 of the PCI module for Group1.)

2. From [Start], select [Control Panel] then [Administrative Tools] and start [Computer Management]. On the tree in the left frame, click [Disk Management].
If the inserted disk is indicated as [Not Initialized] in the right pane, right-click the disk and initialize it.



3. Start [RDR Utility].

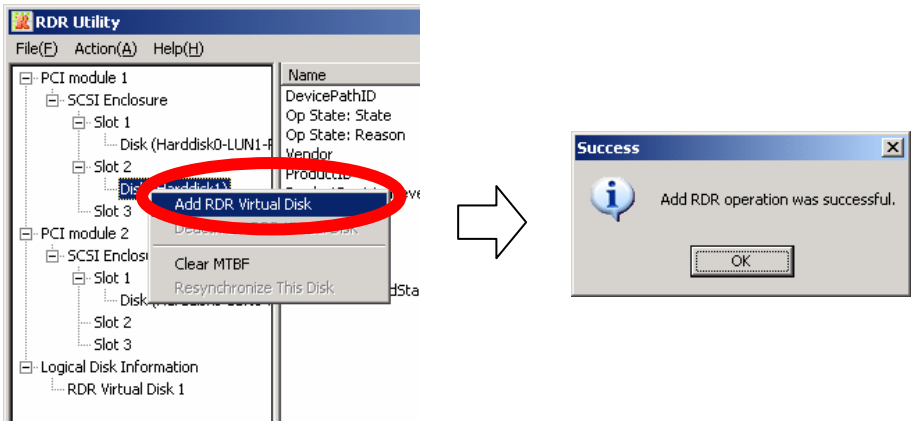
IMPORTANT:

- If the inserted disk does not appear on the tree, from the menu of [RDR Utility], select [Action(A)] and click [Refresh(R)] or press F5 to update the display after awhile.
- The display of [RDR Utility] is not updated automatically. Therefore, update it by clicking [Refresh(R)] from [Action(A)] or pressing F5 on the menu after performing operations described below.

4. On the left tree of [RDR Utility], right-click a disk to set RDR and click [Add RDR Virtual Disk].

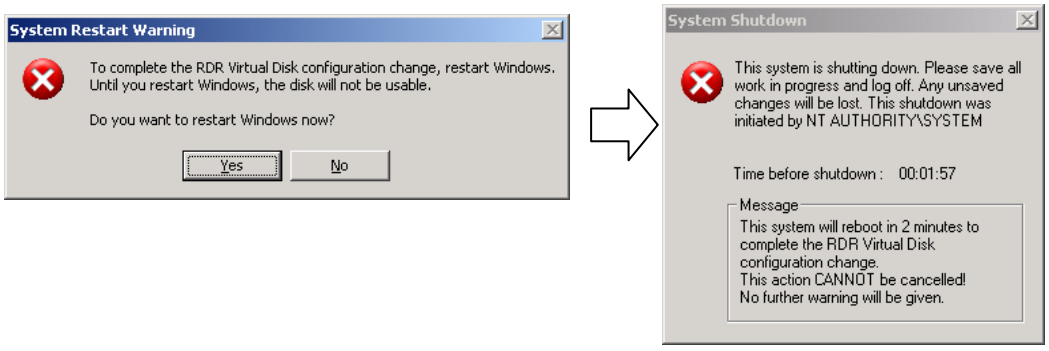
IMPORTANT:

Depending on the disk type, RDR setting may take some time and [RDR Utility] may pause for a few minutes. There is no error, so wait until the process is completed.



IMPORTANT:

When RDR is set to a disk containing the boot partition, the following pop-up message appears, and clicking [Yes] reboots the system automatically in 2 minutes. Follow the steps 5 and on after the restart.

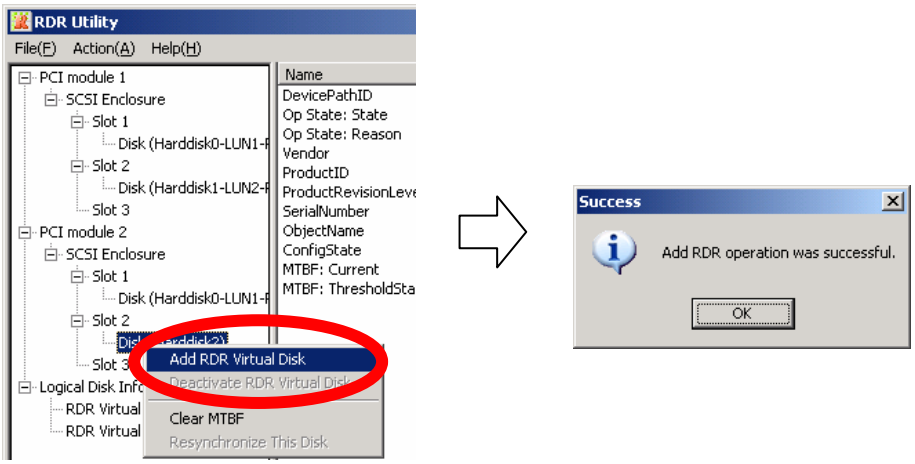


5. Insert a disk to set duplex configuration into the corresponding slot.
(In this example, a disk is inserted into the Slot 2 of the PCI module for Group2.)

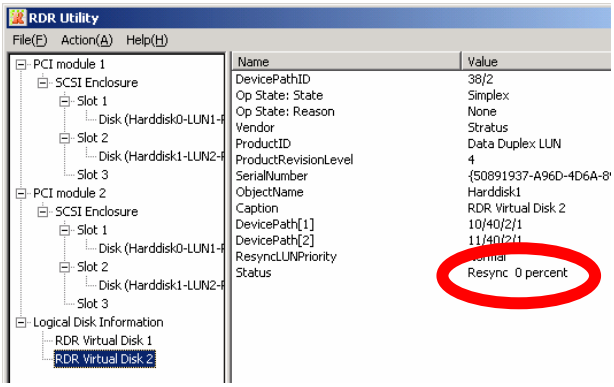
6. On the left tree on [RDR Utility], right-click the disk which was inserted in the previous step and click [Add RDR Virtual Disk].

IMPORTANT:

If the inserted disk has not been initialized on Windows, RDR is set and synchronization starts automatically, so this step is not required. Skip to the next step and check the duplex status.



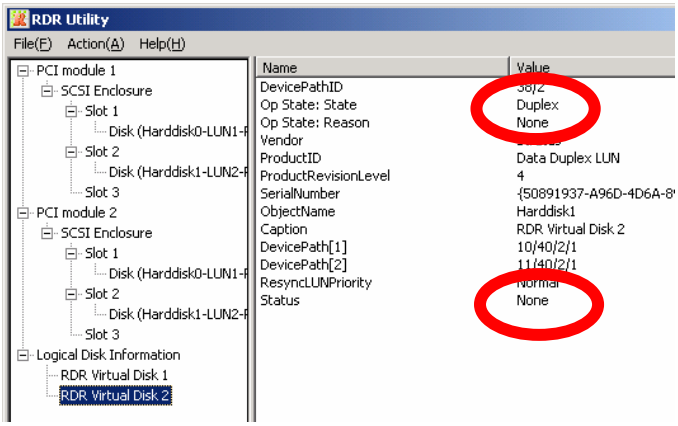
7. Click [Logical Disk Information] and then [RDR Virtual Disk x](x=1,2,3) to confirm that the synchronization is started.



IMPORTANT:

- The time required for synchronization varies depending on the partition size on the disk.
  For 18GB partition, it takes about 16 minutes.
  When there is no partition, synchronization may be completed in a short period of time after RDR is set and the status may change to what is described in the step 8.
- The percentage changes from 0 to 25, 50, 75 depending on the synchronization process progresses.
- If the system is rebooted during synchronization, the process cannot be completed. Do not restart the system until the synchronization is completed.

8. When the [Op State: State] of [RDR Virtual Disk x](x=1,2,3) becomes [Duplex] and [Status] becomes [None], the disk synchronization is completed.



IMPORTANT:

- When a new partition is created on the disk where RDR is set, the created partition area is synchronized automatically.

- When the disk where RDR is set is converted to a dynamic disk, the area which has not been synchronized (the area that no partition exists) will be synchronized.
- When the system is shut down without shutting down Windows properly, for example, by pressing the power button, the entire area of the synchronized disks will be resynchronized after the system is restarted.

Removing duplex configuration of RDR disks

This section describes how to remove duplex configuration from the disk with RDR setting.
In the example below, the duplication setting of the disks in the Slot 2 of the PCI modules for Group 1 and for Group 2 is removed.

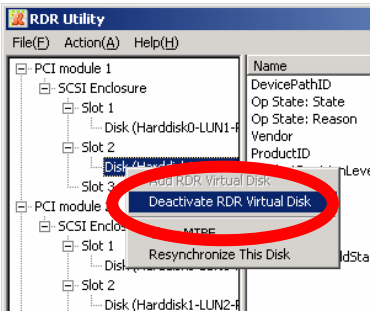
IMPORTANT:

You cannot break the duplex setting of the following disks:

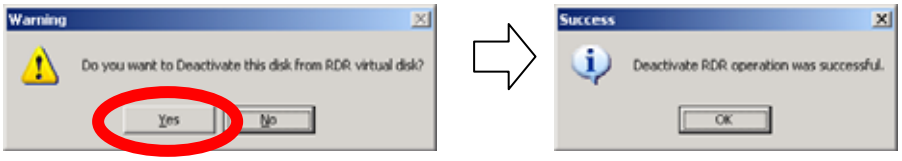
- Disk containing the boot partition or volume
- Disk containing page files
- Dynamic disk

1. Start [RDR Utility].

2. Right-click the disk to deactivate RDR and click [Deactivate RDR Virtual Disk].



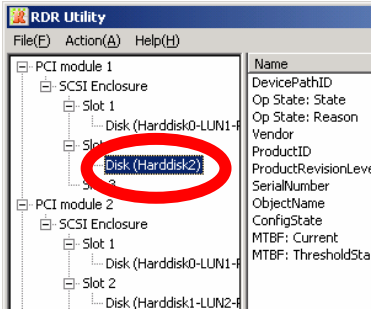
3. In the [Warning] dialog box, click [Yes].



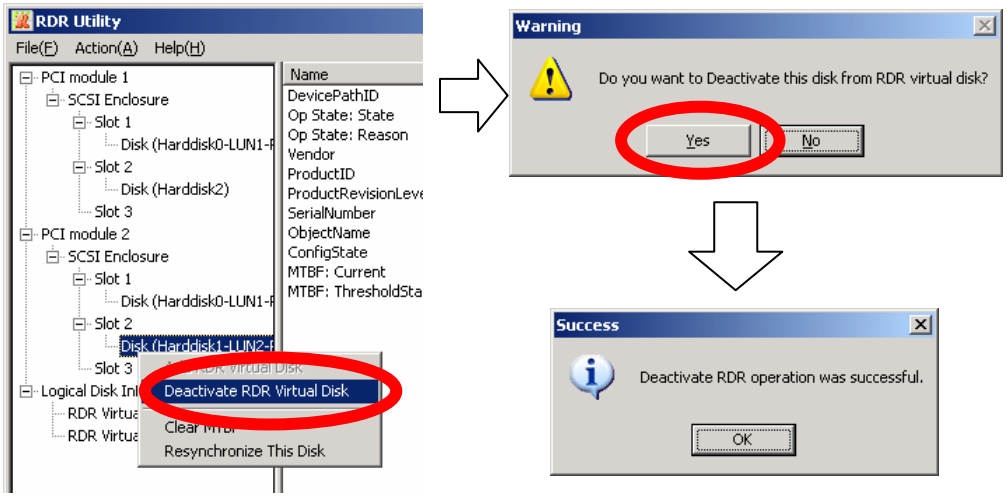
4. The RDR setting is removed from the target disk.

IMPORTANT:

- When the disk does not appear on the tree, update it by clicking [Refresh(R)] from [Action(A)] or pressing F5.
- The display of [RDR Utility] is not updated automatically. When any operation is performed to a disk, update the display manually.



5. Remove the RDR setting from the disk in the corresponding slot (the Slot 2 of the Group2) in the same manner.



IMPORTANT:

A partition on the disk where the RDR setting is removed is not assigned a drive letter. To use the partition, assign a drive letter using [Disk Management].

Other functions of RDR Utility

Clearing MTBF value

When a failure occurs to a disk, the mean time between failures (MTBF) is counted and the value is saved. In RDR Utility, the value is displayed at [MTBF: Current] and [MtbfThresholdStatus].

These MTBF values can be cleared by the [Clear MTBF] command.

1. Start [RDR Utility] and right-click a target disk on the tree in the left frame, and click [Clear MTBF].
2. In the [Success] dialog box, click [OK].

Performing resynchronization

If disk synchronization by RDR is broken due to causes including a failure, resynchronize disks by following either of the procedures below:

[Resynchronization by specifying a disk]

Resynchronize the disk where a command is executed from the disk of the paired slot.

1. Start [RDR Utility] and right-click a target disk in the left frame and click [Resynchronize This Disk].
2. In the [Success] dialog box, click [OK].
3. The [Op State: State] of the disk becomes [Syncing] and resynchronization starts.

4. When [Op State: State] becomes [Duplex], the resynchronization is completed.

[Resynchronization without specifying disk]

1. Start [RDR Utility] and right-click [RDR Virtual Disk x](x=1,2,3) constructed by a disk you wish to resynchronize in the left frame and click [Resynchronize RDR Virtual Disk].
2. In the [Success] dialog box, click [OK].
3. Resynchronization among the disks constructing the virtual disk starts and [Op State: State] becomes [Simplex] and [Status] becomes [Resync x percent](x=0,25,50,75).
4. When [Op State: State] becomes [Duplex] and [Status] becomes [None], the resynchronization is completed.

Verifying RDR disks

Follow the steps below to check if the disk synchronization by RDR is being performed normally.

TIPS:

- The verification process is automatically performed every 12 hours.
- The duration may vary depending on the disk size or load, but the verification process completes in a few seconds.

1. Start [RDR Utility] and right-click [RDR Virtual Disk x](x=1,2,3) in the left frame and click [Verify RDR Virtual Disk].
2. In the [Success] dialog box, click [OK].
3. Disk verification starts and [Status] of the RDR Virtual Disk becomes [Verify x percent](x=0,25,50,75).
4. When [Status] becomes [None], the verification is completed.

Setting priority for resynchronization

Priority of synchronization can be specified for disk mirroring by RDR.

By changing the priority, I/O load during synchronization can be reduced.

1. Start [RDR Utility], right-click [RDR Virtual Disk x](x=1,2,3) in left frame to change the priority and click [Set Resync Priority].
2. When a dialog box appears, select Low, Normal or High (a default is Normal) and click [OK].
3. In the [Success] dialog box, click [OK].

Replacing Failed Hard Disk Drives

Follow the procedure below to locate and replace the failed hard disk. The failed hard disk should be replaced with new device with the server powered-on.

How to Locate Failed Disks

1. From [Start], select [All Programs] - [RDR] and click [RDR Utility] to start [RDR Utility].
2. From the tree on the left frame of [RDR Utility], select each disk and check the values of [MTBF: Current] and [MtbfThresholdStatus] in the right frame.

TIP:
For RDR Utility, see “About RDR Utility” on page 3-16.

[Description of each MTBF value]

Property name	Description	Normal value*
MTBF: Current	Mean time between failures.	Unknown
MtbfThresholdStatus	The status of comparing the MTBF value with the threshold level (1200 seconds).	Normal

* The normal value denotes the value of when no error has occurred.

If either of the values is different from the normal value, the disk has an error.

Procedures to Replace Failed Disks

Models that do not support the RDR function

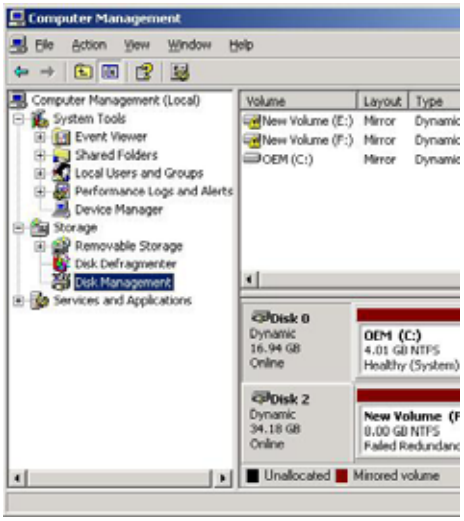
When a failure occurs on a disk mirrored by volume using [Disk Management], follow the steps below to replace the disk.

IMPORTANT:

- To remove a disk due to a failure, etc., compare [Disk Management] and [RDR Utility] to determine the disk to remove. (For RDR Utility, see “About RDR Utility” on page 3-16.)
- To reconfigure a mirror, be sure to confirm the TargetID in the disk’s [Properties] and use the disks with the same number. Do not mirror disks using the disk number shown in [Disk Management].
- When the disk to be inserted into a slot for duplexed configuration of disk has been used as a disk which contains the boot volume (disk storing the OS), the disk cannot be used for duplexed configuration. Initialize the disk to use the disk.

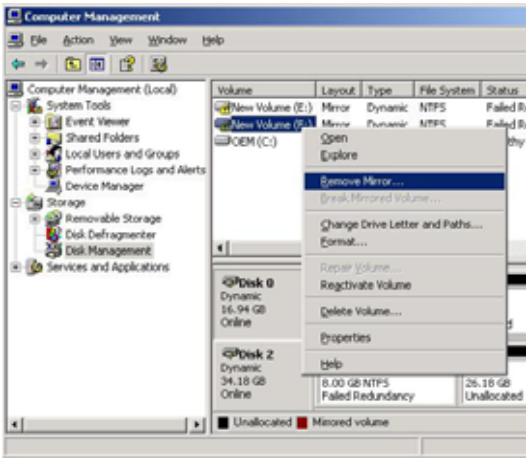
This section describes an example of determining failures of the disk in the Slot 2 of the PCI module for Group1 and the disk in the Slot 3 of the PCI module for Group2 using “How to Locate Failed Disks”.

1. Click [Start] → [Administrative Tools] → [Computer Management]. The [Computer Management] window appears.
2. Click [Disk Management] under [Storage] in the console tree. An example in this figure shows that one of the mirrored disks in which Drives E and F are included is broken. Some disks are indicated as “Unknown disk.” However, they may be indicated differently depending on the error type. Even in such cases, failed disks can be recovered by following the steps below:



3. Remove the hard disks from Slot#2 of Group 1 and Slot#3 of Group 2.

4. Right-click a volume that has “!”, and remove mirror.



5. After checking to see the “Missing” disk is selected, click [Remove mirror]. At Drive (F), [Mirror] and [Failed Redundant] will change to [Simple] and [Healthy].

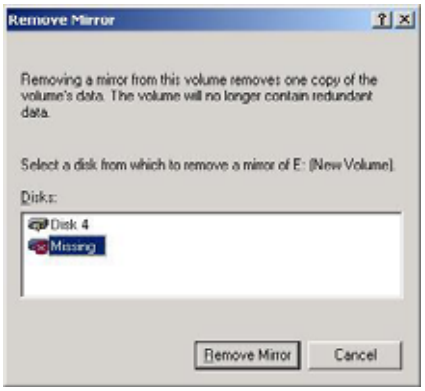


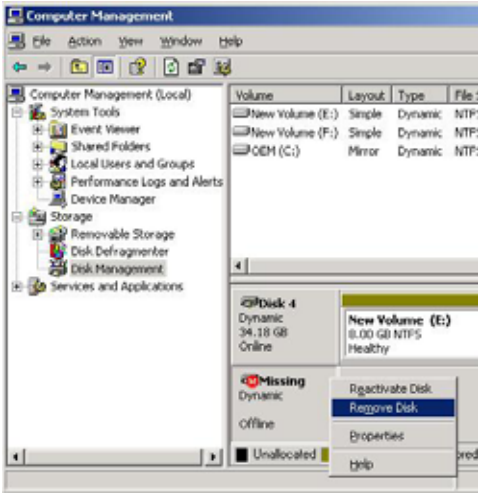
6. Right-click a disk with “x”, and select [Remove Disk].



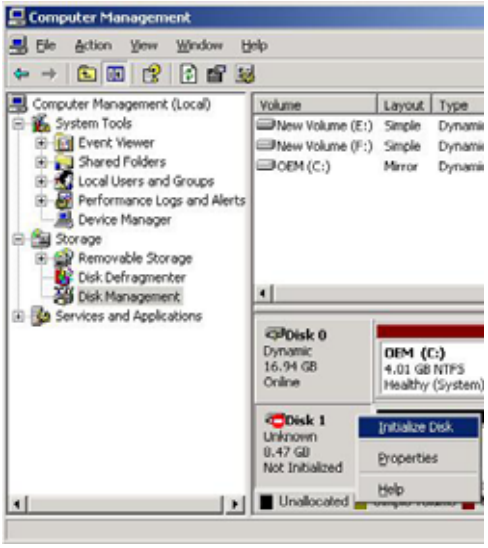
7. Similarly, delete the other [Missing] disk.







8. Insert new disks. They will appear on [Disk Management]. If any uninitialized disk is inserted, right-click the disk and initialize it.



9. Select and right-click a disk, and then select [Convert to Dynamic Disk].





IMPORTANT: If [Foreign] appears, execute [Convert to Dynamic Disk] after [Convert to Basic Disk] is executed.

10. Open the disk's properties to check the target IDs. In the following figures, disks are configured as:

Disk 1: Target ID 1

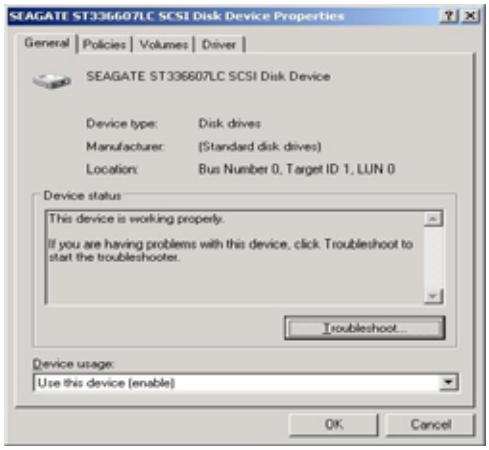
Disk 2: Target ID 2

Disk 4: Target ID 1

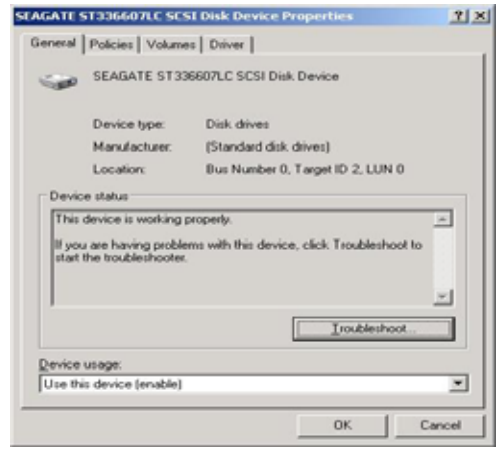
Disk 5: Target ID 2

Disks with the same target ID are mirrored.

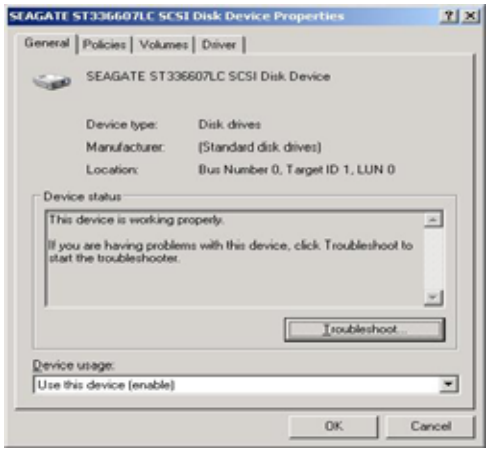
Disk 1



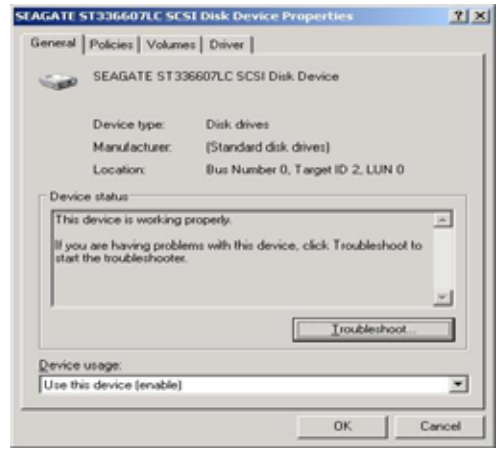
Disk 2



Disk 4

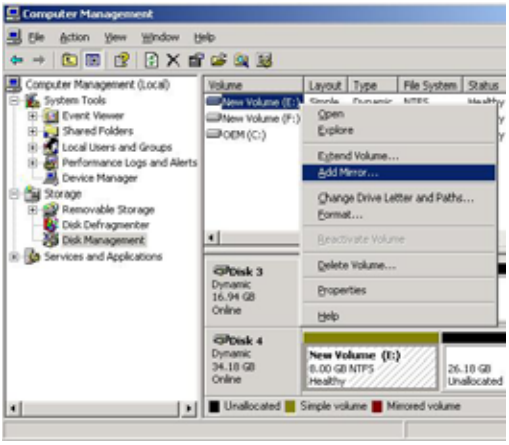


Disk 5

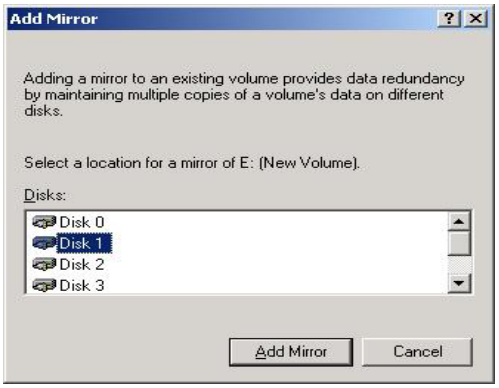


IMPORTANT: Hard disks are numbered from "0" at the OS startup according to the position they are inserted. When you increase a hard disk while the system is running, it will be given a number that is not used for any disks. However when you restart the system, the old disk numbers will not be retained and disks are re-numbered according to the hard disk position. Therefore, you need to determine which disks are mirrored based on target IDs, which are always fixed, but not on disk numbers because disk numbers may change.

11. Make a mirror setting of Disks 1 and 4. Right-click volume (E) on the Disk 4 and select [Add Mirror].



12. When the [Add mirror] dialog box appears, select Disk 1, and then click [Add Mirror].



13. Similarly, make settings of Disk 2 and Disk 5.
Upon completion of synchronous processing, recovery is completed.



Models supporting the RDR function

This section explains the procedure for replacing a disk which is duplexed by the RDR function at disk level when a failure occurs to the disk.

Below describes an example of locating a failure in the disk in the Slot 2 of the PCI module for Group1 by “How to Locate Failed Disks”.

1. From [Start], select [All Programs] - [RDR] - [RDR Utility] to start [RDR Utility].
2. Remove the disk in the Slot 2 of the PCI module for Group1.
3. Insert a new disk to the Slot 2 of the PCI module for Group1.

   IMPORTANT:
   Insert a disk which has the same capacity with the one inserted in the Slot 2 of the PCI module for Group2, and which is new or physically formatted.

4. Update the display of [RDR Utility], and confirm that the new disk is displayed and the LEDs of the PCI module and the disk illuminate green.
5. Right-click the [RDR Virtual Disk x](x=1,2,3) which is constructed by the replaced disk (Slot 2 of the PCI module for Group1) and click [Resynchronize RDR Virtual Disk].
6. Synchronization of the disk and the paired disk starts.
7. When [Op State: State] of [RDR Virtual Disk x](x=1,2,3) becomes [Duplex] and [Status] becomes [None], the synchronization is completed.

CHANGE DRIVE LETTER

To add, change or delete drive letters, follow the steps below. Before making any changes, thoroughly read the NEC Express5800/ft series-specific precautions and general precautions for Windows.

1. Select [Start] - [Control Panel] - [Administrative Tools] and open [Computer Management].
2. In the console tree of [Computer Management], click [Disk Management].
3. Right-click a target partition, logical drive or volume and click [Change Drive Letter and Paths…].
4. Perform one of the following:
   - To assign a drive letter, click [Add…], a drive letter to use, then [OK].
   - To change a drive letter, click the drive letter to change, [Change…], a drive letter to use, then [OK].
   - To delete a drive letter, click the drive letter to delete then [Remove].

IMPORTANT:

<NEC Express5800/ft series-specific precautions>
One CD-ROM drive for each PCI module (total of two CD-ROM drives) is installed in NEC Express5800/ft series. If those CD-ROM drives' N-codes are different, the drive letter assigned to the CD-ROM drive may be changed (reassigned) when the secondary PCI module becomes the primary module at startup. In such case, follow the instruction above to change back the drive letter. It is recommended to specify "D" as the CD-ROM drive's drive letter. (The change of drive letter due to the change of primary PCI module can be suppressed.)

<General precautions for Windows>
- Drive letter of system volume or boot volume cannot be changed.
- Up to 26 drive letters can be used on a computer. "A" and "B" are drive letters for floppy disk drives. Generally, hard disk drives are assigned "C" to "Z", but for network drives, drive letters are assigned in a reverse order ("Z" to "C").
- Because many of Windows programs refer to specific drive letters, cautions are required for assigning drive letters. For example, the Path environment variable specifies a program name and a specific drive letter.
- For performing the procedure above, you need to be a member of Backup Operators group or Administrators group, or you need to have appropriate authorization.

DUAL LAN CONFIGURATION

The NEC Express5800/ft series builds a dual LAN configuration by using "Stratus emb-82559 10/100 Enet Adapter" (100Base) and "Stratus emb-82544GC Copper Gigabit Adapter" (1000Base) mounted as standard on the PCI module.

Overview

The dual LAN configuration is of two types.

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the through put by operating packet transmission from the server by all the adapters. This feature includes AFT feature.

Configuring dual LAN

TIPS: To set dual LAN configuration, log on as "Administrator" or a member of the group "Administrators".

1. Display the [Intel(R)PROSet II] dialog box by starting one of the start menu modes below:

Standard start menu mode

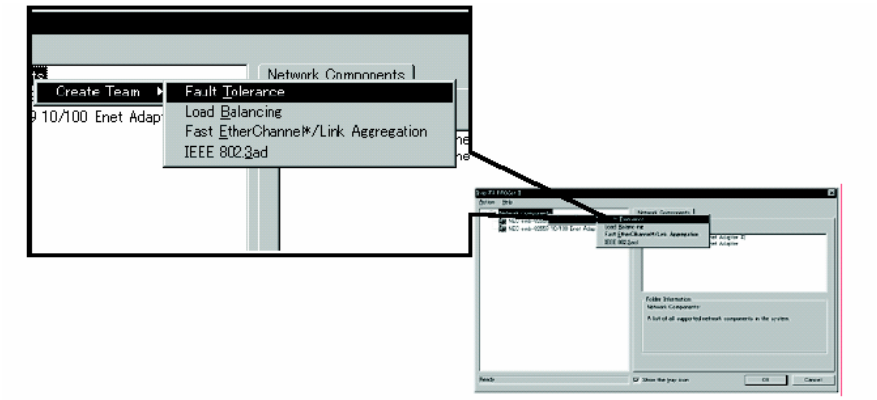
Click [Intel(R)PROSet II] in [Control Panel] from the [Start] menu.

Classic start menu mode

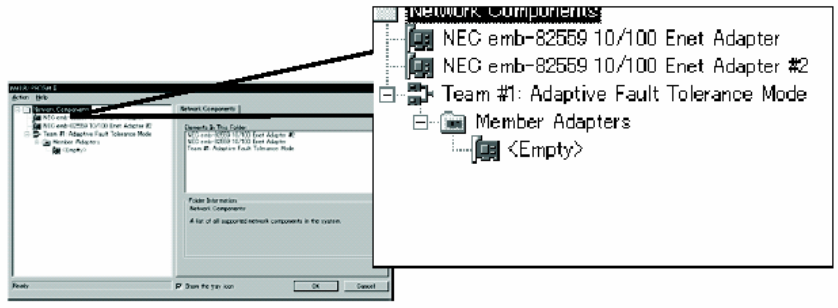
(1) Select [Control Panel] from [Settings] of the [Start] menu.

(2) Double-click the [Intel(R)PROSet II] icon.

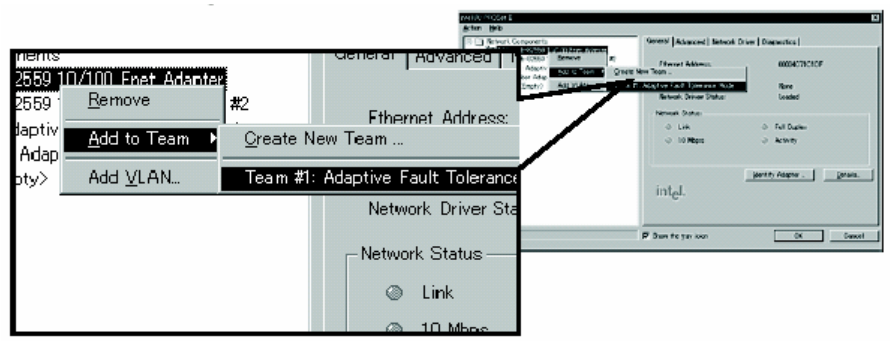
2. Select [Network Components] from Network Component Tree. The pop-up menu appears. Select [Fault Tolerance] from [Create Team].



[Team #1: Adaptive Fault Tolerance Mode] is added to Network Component Tree.



3. Select [Stratus emb-82559 10/100 Enet Adapter] from Network Component Tree. The pop-up menu appears. Select [Team #1: Adaptive Fault Tolerance Mode] from [Add to Team], and add the adapters.



You will see the warning message when you add the team. You can ignore this warning message by clicking [OK]. This warning message is to inform you that only one adapter is added to the team.

4. Select [Stratus emb-82559 10/100 Enet Adapter #2] from Network Component Tree in the same manner as for 4. The pop-up menu appears. Select [Team #1: Adaptive Fault Tolerance Mode] from [Add to Team], and add the adapters.

IMPORTANT: Do not set [Preferred Primary] or [Preferred Secondary] to each adapter.

5. Make settings of dual configuration for "Stratus emb-82544GC Copper Gigabit Adapter" (1000Base) as well.
Perform 3 to 5 in the same manner, replacing [Stratus emb-82559 10/100 Enet Adapter] with [Stratus emb-82544GC Copper Gigabit Adapter].

In 3, you can also select [Load Balancing]. In this case, [Team #X: Adaptive Load Balancing Mode] will be added.

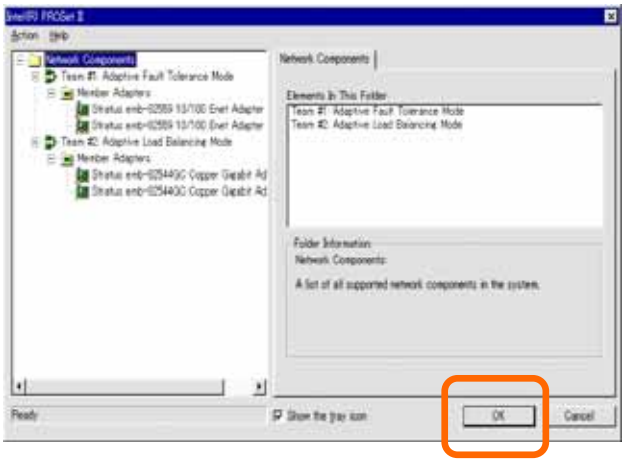
When the option boards are used, perform 3 to 5 in the same manner, replacing [Stratus emb-82559 10/100 Enet Adapter] with the following.

N8804-001P1: [Stratus AA-U51500 10/100 Enet Adapter]

N8104-84: [Stratus AA-U57000 Fiber Gigabit Adapter]

N8104-103: [NEC 8490XT Copper Gigabit Adapter]

6. Click [OK].
The [Intel(R)PROSet II] dialog box closes after a while, and the settings become effective.



IMPORTANT:

- The [Digital signature not found] dialog box may appear (several times). If it appears, click [Yes].
- After the settings of dual configuration, “Intel(R) Advanced Network Services Virtual Adapter” will appear on the [Network and dialup connection] or [Device Manager] dialog box. Therefore 6 adapters that consist of two "Virtual", two "100Base", and two "1000Base" adapters will appear on the [Network and dialup connection] or [Device Manager] dialog box. Do not “disable” the status of this “Virtual Adapter”. If you enable it again, the system may become unstable and you may need to restart it.
- Set IP address for "Virtual Adapter" after the settings of dual configuration. Do not set IP address for "100Base Adapter" or "1000Base Adapter".
- Use a hub for dual configuration. Use a repeater hub or a switching hub for AFT function. Use a switching hub for ALB function.
- Connect the network cables to the both primary and secondary PCI modules. After the settings of dual configuration, if one network cable is disconnected from a PCI module or a hub, the status of the PCI modules becomes simplex. In such case, if the network cable is connected to the PCI module or the hub again, the status of the PCI modules becomes duplex.

Removing dual LAN

TIPS: To set dual LAN configuration, log on as "Administrator" or a member of the group "Administrators".

1. Display the [Intel(R)PROSet II] dialog box by starting one of the start menu modes below:

Standard start menu mode

Click [Intel(R)PROSet II] in [Control Panel] from the [Start] menu.

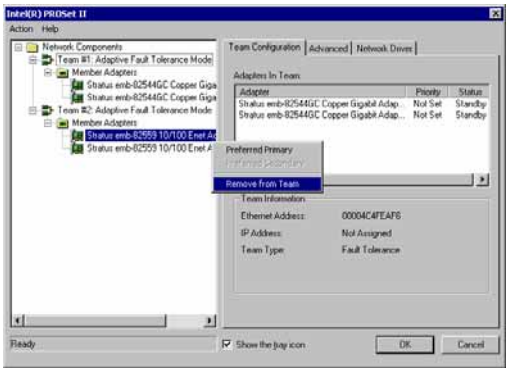
Classic start menu mode

(1) Select [Control Panel] from [Settings] of the [Start] menu.

(2) Double-click the [Intel(R)PROSet II] icon.

2. Remove all adapters from Duplication.

Right-click the following adapters on the control tree which is located on the left side of the [Intel(R)PROSet II] dialog box and select [Remove from Team].



<For on-board >

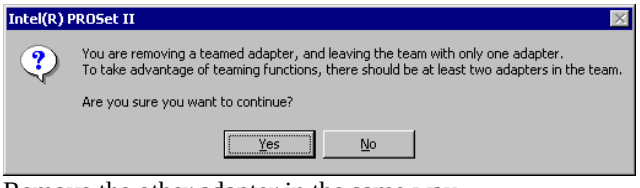
- Stratus emb-82559 10/100 Enet Adapter
- Stratus emb-82544GC Copper Gigabit Adapter

<For option board >

- Stratus AA-U51500 10/100 Enet Adapter (100BASE-TX)
- Stratus AA-U57000 Fiber Gigabit Adapter (1000 BASE-SX)
- NEC 8490 XT Copper Gigabit Adapter (1000 BASE-T)

You will then see the dialog box on the right of this paragraph. This is because one of two teamed adapters constituting dual configuration is removed.

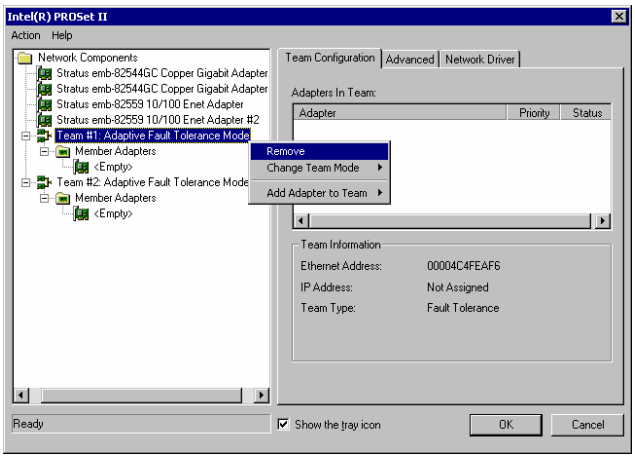
Click [Yes], to remove the adapter from Team.



Remove the other adapter in the same way.

<For on-board >
- Stratus emb-82559 10/100 Enet Adapter
- Stratus emb-82544GC Copper Gigabit Adapter

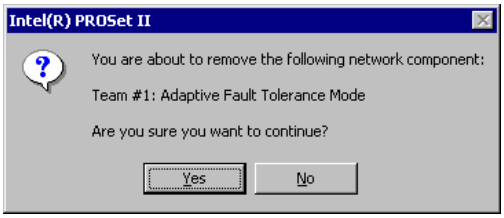
<For option board >
- Stratus AA-U51500 10/100 Enet Adapter (100BASE-TX)
- Stratus AA-U57000 Fiber Gigabit Adapter (1000 BASE-SX)
- NEC 8490 XT Copper Gigabit Adapter (1000 BASE-T)



3. Right click [Team #1:Adaptive Fault Tolerance Mode] and select [Remove].

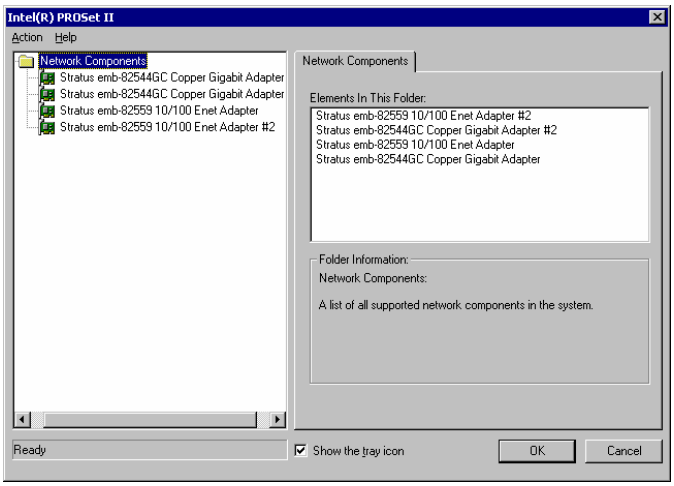
At that time, the dialog box shown on the right is displayed. This is a message for confirmation, so click [Yes] button.

Remove all teams displayed on the [Intel PRO Set II] dialog box in the same manner.



4. Click the [OK] button on the [Intel PROSet II] dialog box, close it, and make a setup effective.

The dual LAN will be canceled.



CHECK THE DUPLICATING OPERATION OF MODULES

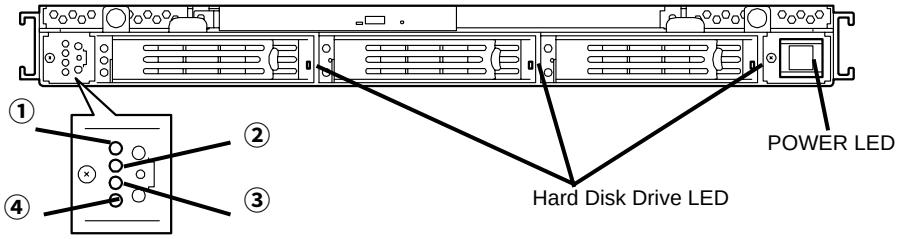
This section describes how to check if the system runs properly after system installation or reinstallation.

Evaluate Startup and Stop of PCI Modules

This section describes how to confirm the continuous system operation by failover after stopping the primary PCI module.

1. Check which is the primary PCI module.
The PCI module with the POWER switch illuminated is the primary module.

2. Check whether the PCI modules are duplicated.
To check if the PCI modules are duplicated, see the PCI modules' status LEDs.

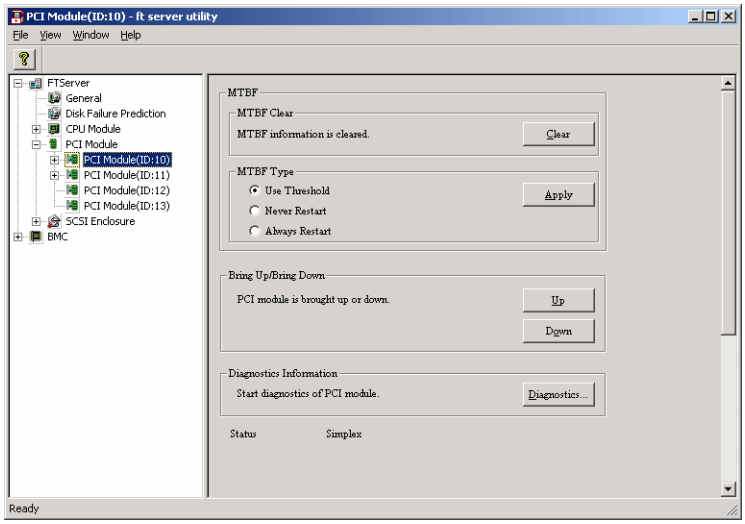


[Indications of the status LEDs when PCI modules are duplicated]

LED		Primary	Secondary
1	BMC status LED	Green	Green
2	PCI module status LED1	-	-
3	PCI module status LED2	Green	Green
4	DISK ACCESS LED	Green or off	Green or off
DISK LED		Green	Green

* The numbers in the table correspond to the numbers in the above figure.
The DISK ACCESS LED (4) lights when the hard disk drive is accessed.

3. Stop the operation of a PCI module using the ft server utility.
Select [Start] - [All Programs] - [NEC ESMPRO Agent] - [ft server utility] to start the ft server utility.
Then, from the ft server utility, select [PCI Module] then the primary PCI module from the [FTSever] tree on the left pane, and click [Down] of [Bring Up/Bring Down]. When you stop the operation of the primary PCI module, a failover occurs and the secondary PCI module becomes the primary module.



The following events or changes occur when stopping the primary PCI module and the module fails over:

- The screen temporarily blacks out and then displayed again.
- The following message will appear from the taskbar:
  Windows - FT Orphaning: A disk that is part of a fault-tolerant volume can no longer be accessed.
  * The message denotes that the mirror volumes of the hard disk stored in the disconnected PCI module are released.
  * The message will not appear if disks are duplicated by the RDR function.
- Indications of PCI modules' status LEDs change as follows:
  [Indications of status LEDs]

LED		Secondary*	Primary*
1	BMC status LED	Green	Green
2	PCI module status LED1	Red	-
3	PCI module status LED2	-	Amber
4	DISK ACCESS LED	-	Amber
DISK LED		-	Amber

* The primary and secondary modules after failover

4. Restart the PCI module.
From the ft server utility, click [Up] of [Bring Up/Bring Down] to the PCI module which was stopped in the step 3, and the PCI module will be started. Once the PCI module is started, PCI module diagnosis, mirror volume duplication and PCI module duplication are performed.

IMPORTANT: If BrightStor ARCserve 2000 or Backup Exec is installed, the tape will not be recognized due to the failover of the PCI module. Thus be sure to stop the services before starting the PCI module.

1. Start [Services] from [Administrative Tools] of [Control Panel].
2. Select a service of backup software.
3. Choose “Stop” from the “Action” menu.
4. Repeat 2 and 3 for all services of the backup software.

The PCI modules’ status LEDs changes as shown below:

[Indications of the status LEDs]

Immediately after the PCI module startup until the completion of diagnosis

LED		Secondary	Primary
1	BMC status LED	Green	Green
2	PCI module status LED1	Red	-
3	PCI module status LED2	Green	Amber
4	DISK ACCESS LED	-	Amber
DISK LED		Green	Amber



When duplication of disks is started after the completion of PCI module diagnosis

* The status of LEDs differ depending on the method of disk duplication.

LED		Secondary		Primary
		Non-RDR model	RDR model	
1	BMC status LED	Green	Green	Green
2	PCI module status LED1	-	-	-
3	PCI module status LED2	Amber	Green	Amber
4	DISK ACCESS LED	Amber	Green	Amber
DISK LED		Amber	Green	Amber



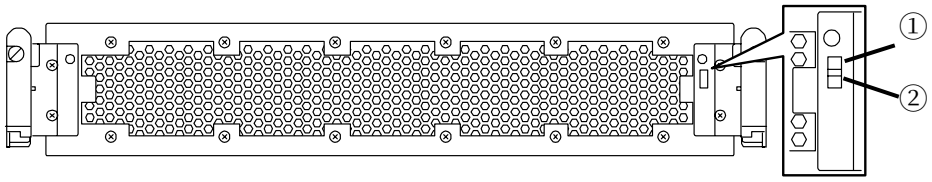
After the completion of disk duplication and when the PCI modules are duplicated

LED		Secondary	Primary
1	BMC status LED	Green	Green
2	PCI module status LED1	-	-
3	PCI module status LED2	Green	Green
4	DISK ACCESS LED	Green or off	Green or off
DISK LED		Green	Green

Evaluate Start and Stop of CPU Modules

This section describes how to confirm the continuous system operation after stopping one of the CPU modules.

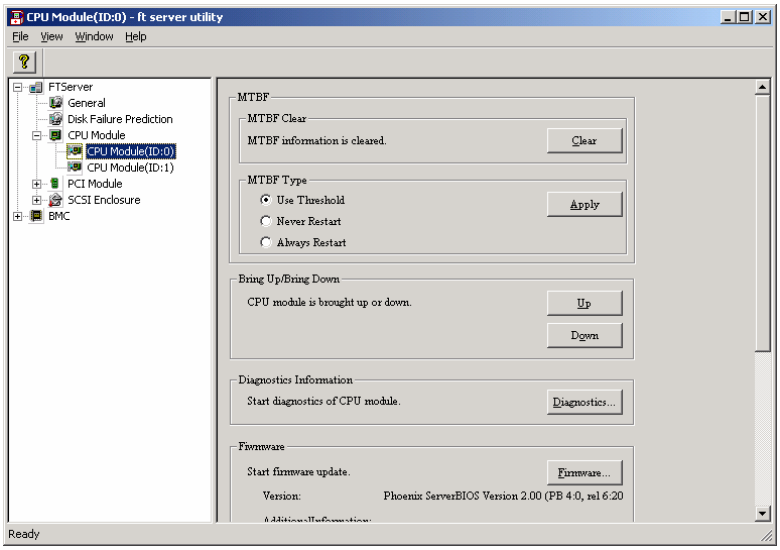
1. Confirm that the CPU modules are duplicated.
To check if the CPU modules are duplicated, see the status LEDs of the CPU modules.



[Indications status LEDs when CPU modules are duplicated]

LED		CPU module#1 (Operating)	CPU module#2 (Operating)
1	CPU module status LED1	-	-
2	CPU module status LED2	Green	Green

2. Use the ft server utility to stop the operation of a CPU module to remove.
From [Start], select [All Programs], [NEC ESMPRO Agent] then [ft server utility] to start the ft server utility. Then, from the [FTSever] tree on the left pane of the ft server utility, select [CPU Module] then the CPU module to stop, and click [Down] of [Bring Up/Bring Down].



When you stop the operation of a CPU module, the indications of the status LEDs change as follows. Below denotes that the only one CPU module is operating.

[Indications of status LEDs]

LED		CPU module#1 (Stopped)*	CPU module#2 (Operating)
1	CPU module status LED1	Red	-
2	CPU module status LED2	-	Amber

* As an example, the indications of when CPU module#1 is stopped are shown.

3. Press the start button of the CPU module stopped by ft server utility.
In the ft server utility, select the stopped CPU module and click [Up] of [Bring Up/Bring Down].
Once the CPU module is started, hardware diagnosis and then synchronization of memory (memory copy) are performed, and the duplication process is completed.
Note that the system is paused temporarily for copying memory during memory synchronization.

[Indications of status LEDs during diagnosis]

LED		CPU module#1 (Started)	CPU module#2 (Operating)
1	CPU module status LED1	Red	-
2	CPU module status LED2	Green	Amber



[Indications of status LEDs after completion of duplication]

LED		CPU module#1 (Operating)	CPU module#2 (Operating)
1	CPU module status LED1	-	-
2	CPU module status LED2	Green	Green

IMPORTANT:

After duplication is completed, the status of memory will be checked.

Wait until this process ends to perform the next step (evaluation of start and stop of PCI and CPU modules). When the process is complete, the following event log will be output:

Source: srabid

Type: Information

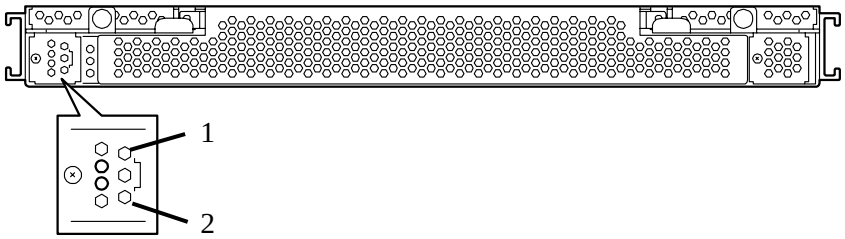
Event ID: 4137

Description: Memory consistency check has completed memory scan.

Evaluate Start and Stop of Expansion PCI Modules

This section describes how to confirm the continuous system operation after stopping one of the expansion PCI modules.

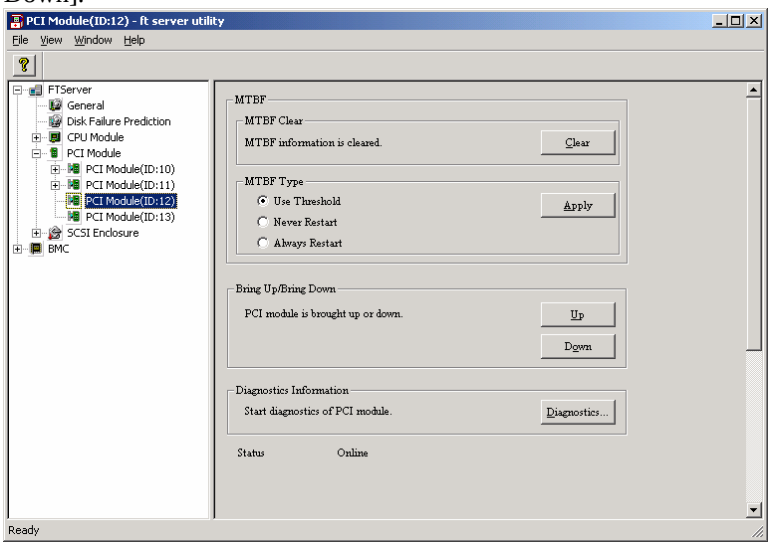
1. Confirm that the expansion PCI modules are duplicated.
To check if the expansion PCI modules are duplicated, see the status LEDs of the expansion PCI modules.



[Indications of status LEDs when expansion PCI modules are duplicated]

LED		Expansion PCI module#1 (Operating)	Expansion PCI module#2 (Operating)
1	Expansion PCI module status LED1	-	-
2	Expansion PCI module status LED2	Green	Green

2. Use the ft server utility to stop the operation of an expansion PCI module to remove.
From [Start], select [All Programs], [NEC ESMPRO Agent] then [ft server utility] to start the ft server utility. Then, from the [FTServer] tree on the left pane of the ft server utility, select [PCI Module] then the expansion PCI module to stop, and click [Down] of [Bring Up/Bring Down].



* On the ft server utility, the PCI module (ID: 13) corresponds to the expansion PCI module #1, and the PCI module (ID: 12) corresponds to the expansion PCI module #2.

When you stop the operation of an expansion PCI module, the indications of the status LEDs

change as follows. Below denotes that the only one expansion PCI module is operating.

[Indications of status LEDs]

LED		Expansion PCI module#1 (Stopped)*1	Expansion PCI module#2 (Operating)
1	Expansion PCI module status LED1	Red	-
2	Expansion PCI module status LED2	-	Green/Amber*2

*1 This is an example of stopping the expansion PCI module #1.

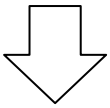
*2 When no option board is mounted to the expansion PCI module, the LED illuminates green. If an option board is mounted, the LED illuminates amber.

3. Use the ft server utility to restart the stopped expansion PCI module.
In the ft server utility, select the stopped expansion PCI module and click [Up] of [Bring Up/Bring Down].
Once the expansion PCI module is started, hardware will be diagnosed and then duplicated.

[Indications of status LEDs during diagnosis]

LED		Expansion PCI module#1 (Diagnosing)	Expansion PCI module#2 (Operating)
1	Expansion PCI module status LED1	Red	-
2	Expansion PCI module status LED2	Green	Green/Amber*

* When no option board is mounted to the expansion PCI module, the LED illuminates green. If an option board is mounted, the LED illuminates amber.



[Indications of status LEDs after completion of duplication]

LED		Expansion PCI module#1 (Operating)	Expansion PCI module#2 (Operating)
1	Expansion PCI module status LED1	-	-
2	Expansion PCI module status LED2	Green	Green

NEC Express5800/ft series SERVICE PROGRAM CONFIGURATION

NEC Express5800/ft series achieves the duplex system using the following service programs, in addition to dedicated drivers.

Service program names shown in [Services]:
- Stratus ftServer Maintenance and Diagnostics (MAD)
- Stratus ftServer Provider Manager
- Stratus ftServer Storage Manager
- Stratus ftServer eService
- Stratus ftServer RPC Provider
- Stratus ftServer SSN
- Windows Management Instrumentation
- SNMP Service
- Alert Manager Main Service
- ESMFSService
- ESMCommonService
- ESRAS Utility Service
- ESMPS

The above programs are necessary for the NEC Express5800/ft series operation. Do not stop these services.

When minimizing the number of operating service programs temporarily is required (for system disk backup using backup software, etc), the following service programs may be stopped:

Services that can be stopped:
- ESMFSService
- ESRAS Utility Service

Services required to keep operating
- Stratus ftServer Maintenance and Diagnostics (MAD)
- Stratus ftServer Provider Manager
- Stratus ftServer Storage Manager
- Stratus ftServer eService
- Stratus ftServer RPC Provider
- Stratus ftServer SSN
- Windows Management Instrumentation
- SNMP Service
- Alert Manager Main Service
- ESMCommonService
- ESMPS
- Virtual Disk Service (when using Windows' Disk Management)

Make sure to restart the operations of stopped service programs immediately after the backup processes are completed.

(This page is intentionally left blank.)

Chapter 4

System Configuration

This chapter describes Basic Input Output System (BIOS) configuration.

When you install the server for the first time or install/remove optional devices, thoroughly read this chapter for better understanding and correct setups.

SYSTEM BIOS ~ SETUP ~

The SETUP utility is provided to make basic hardware configuration for the server. This utility is pre-installed in the flash memory of the server and ready to run.

The server is configured with the correct parameters using the SETUP utility and shipped in the best conditions.

IMPORTANT:

- The SETUP utility is intended for system Administrator use only.
- Do not set any password before installing the OS.
- The server contains the latest version of the SETUP utility. Dialog boxes appearing on your SETUP utility, thus, may differ from descriptions in this User's Guide. If you find anything unclear, see the online help or ask your sales agent.

Starting SETUP Utility

Powering on the server starts POST (Power On Self-Test) and displays its check results. If the NEC logo is displayed, press **Esc**.

After a few seconds, the following message appears at bottom left on the screen depending on your system configuration.

```
Press <F2> to enter SETUP
```

Press **F2** to start the SETUP utility and display its Main menu.

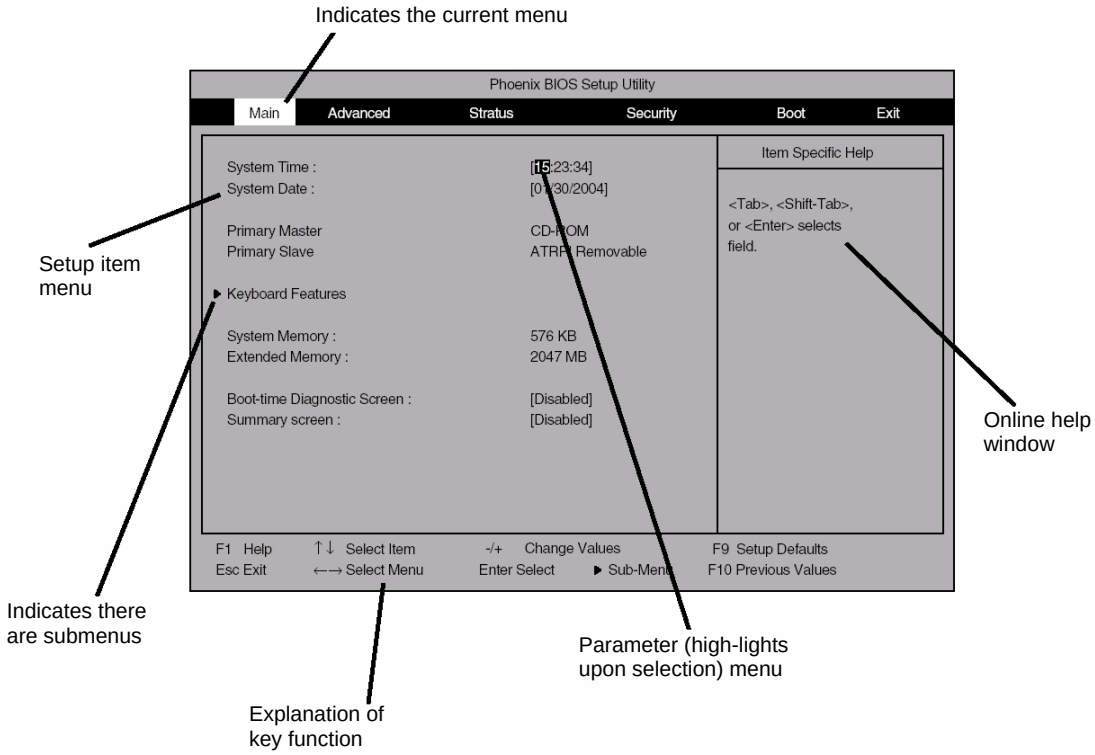
If you have previously set a password with the SETUP utility, the password entry screen appears. Enter the password.

```
Enter password:[                ]
```

Up to three password entries will be accepted. If you fail to enter the password correctly for three consecutive times, the server halts. (You can no longer proceed.) Power off the server.

Description of On-Screen Items and Key Usage

Use the following keyboard keys to work with the SETUP utility. (Key functions are also listed at the bottom of the screen.)



Cursor (↑, ↓):	Selects an item on the screen. The highlighted item is currently selected.
Cursor (←, →):	Selects the Main, Advanced, Stratus, Security, Boot, or Exit menu.
– and **+**:	Changes the value (parameter) of the selected item. When a submenu option (an option proceeded by " ▶ ") is selected, these keys are disabled.
Enter	Press **Enter** to choose the selected parameter.
Esc	Displays the previous screen.
F1:	Press **F1** when you need help on SETUP operations. The help screen for SETUP operations appears. Press **Esc** to return to the previous screen.
F9:	Sets the default parameter to the parameter of the currently displayed item. (The default parameter may differ from the factory setting.
F10:	Save configuration values and exit.

Menu and Parameter Descriptions

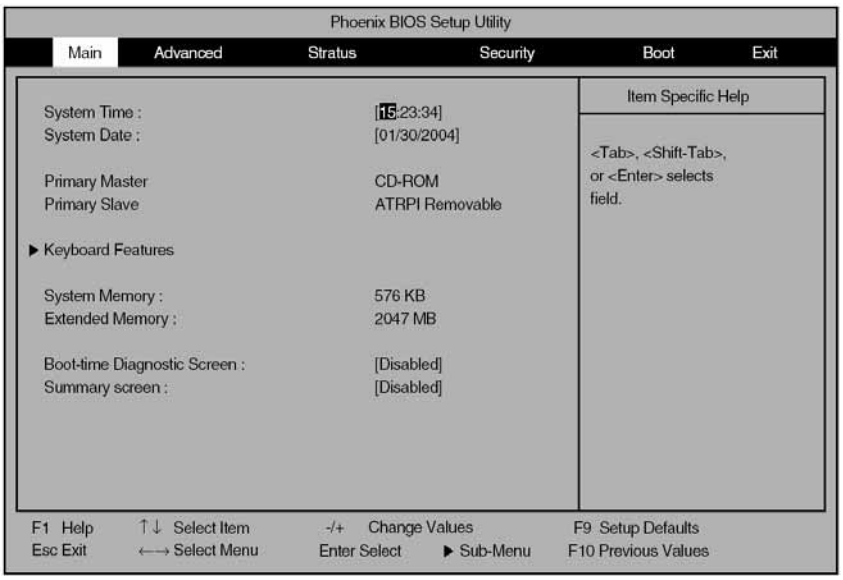
The SETUP utility has the following six major menus:

- Main
- Advanced
- Stratus
- Security
- Boot
- Exit

To configure detailed settings of functions, select a submenu from the above menus. Below describes configurable functions and parameters and the factory settings displayed in the screen for each menu.

Main

Start the SETUP utility to display the Main menu.



Available options in the Main and descriptions are listed below.

Option	Parameter	Description	Your Setting
System Time	HH:MM:SS	Specify the current time.	
System Date	MM/DD/YYYY	Specify the current date.	
Primary Master	–	Indicates device type connected to IDE (Primary master). (View only)	
Primary Slave	–	Indicates device type connected to IDE (Primary slave). (View only)	
System Memory	–	Indicates the total size of the base memory (view only).	
Extended Memory	–	Indicates the total size of the extended memory (view only).	
Boot-time Diagnostic Screen	[Disabled] Enabled	Specify whether to display the Power On Self-Test (POST) screen at start-up.	
Summary screen	[Disabled] Enabled	Specify whether to display the system devices detected at start-up.	

[ ]: Factory-set

You can access the Keyboard Features submenu from Main menu.

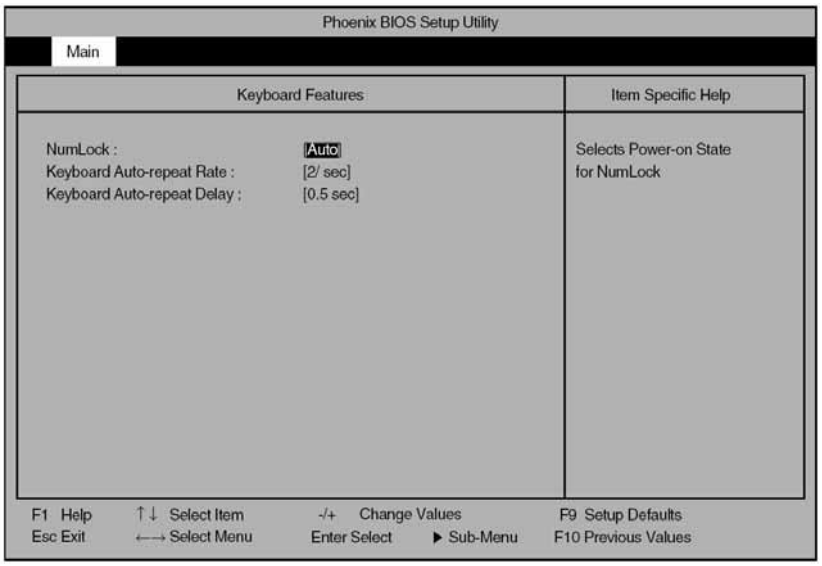
Select the Keyboard Features menu and press **Enter** to display its submenus.

IMPORTANT: Check and adjust the system clock before operation in the following conditions:
- After transporting the equipment
- After storing the equipment
- After the equipment halt under the conditions which is out of the guaranteed environment conditions (Temperature: 10 to 35C°, Humidity: 20 to 80%).

Check the system clock once in a month. It is recommended to operate the system clock using a time server (NTP server) if it is installed on the system which requires high level accuracy. If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment is performed, contact your sales agent.

Keyboard Features

Select "Keyboard Features" on the Main menu to display the following screen.



See the table below for setup options on the screen.

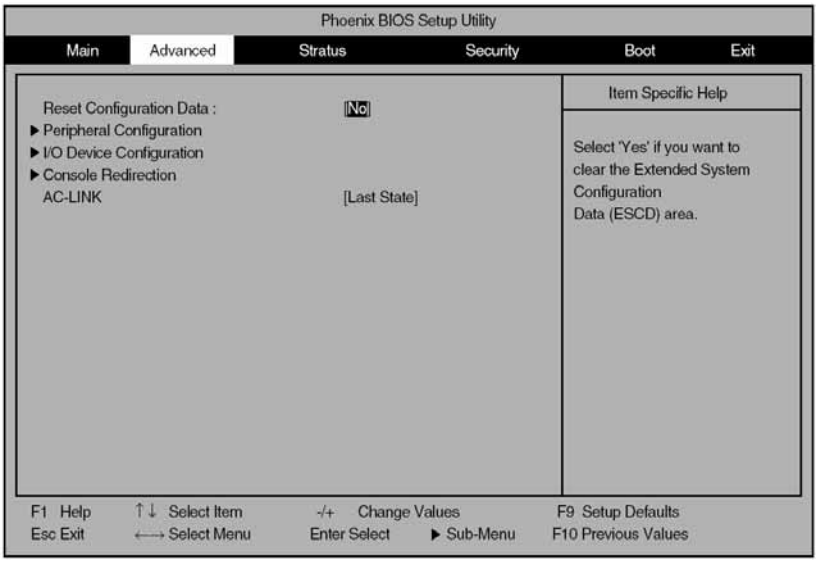
Option	Parameter	Description	Your Setting
NumLock	[Auto] On Off	Enable or disable the NumLock feature at system start-up. If "Auto" is selected, the NumLock feature will be enabled when an entry with the keypad is detected.	
Keyboard Auto-repeat Rate	10/sec 6/sec [2/sec]	Select the number of characters repeatedly output in a second when a key is pressed.	
Keyboard Auto-repeat Delay	0.25 sec [0.5 sec] 0.75 sec 1 sec	Select a period before a key character starts repeated.	

[ ]: Factory-set

Advanced

Move the cursor onto "Advanced" to display the Advanced menu.

Select an option with the "►" mark and press **Enter** to display its submenu. Then, make necessary settings.



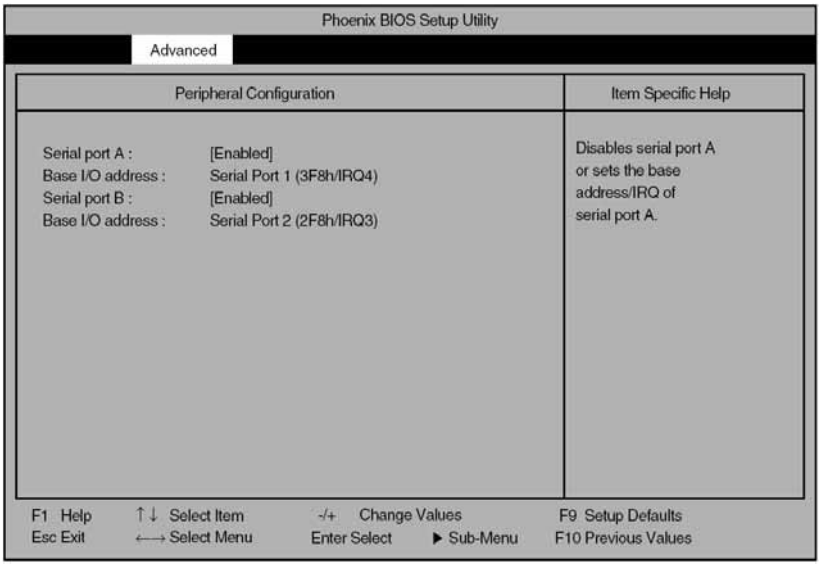
See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Reset Configuration Data	[No] Yes	Select "Yes" to clear the configuration data (system information stored by POST). The parameter "No" will be resumed when the server restarts.	
AC-LINK	Stay Off [Last State] Power On	Sets the AC-LINK feature. Determines the operation mode of the server if a power loss occurs. Select "Power On" when the server is connected to UPS.	

[ ]: Factory-set

Peripheral Configuration

Select "Peripheral Configuration" on the Advanced menu to display the following screen.



See the table below for setup options on the screen.

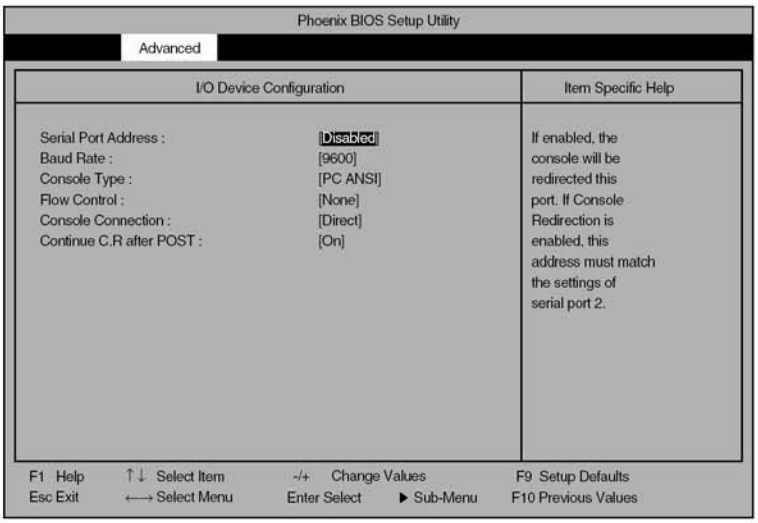
IMPORTANT: Make sure to avoid any conflict in the interrupt requests or the base I/O addresses.

Option	Parameter	Description	Your Setting
Serial port A	Disabled [Enabled] Auto	Disable the serial port A, or specify a base address and interrupt.	
Base I/O address	Serial Port 1 (3F8h/IRQ4)	Displayed only when serial port A is enabled.	
Serial port B	Disabled [Enabled] Auto	Disable the serial port B, or specify a base address and interrupt.	
Base I/O address	Serial Port 2 (2F8h/IRQ3)	Displayed only when serial port B is enabled.	

[ ]: Factory-set

Console Redirection

Select "Console Redirection" on the Advanced menu to display the following screen.



See the table below for setup options on the screen.

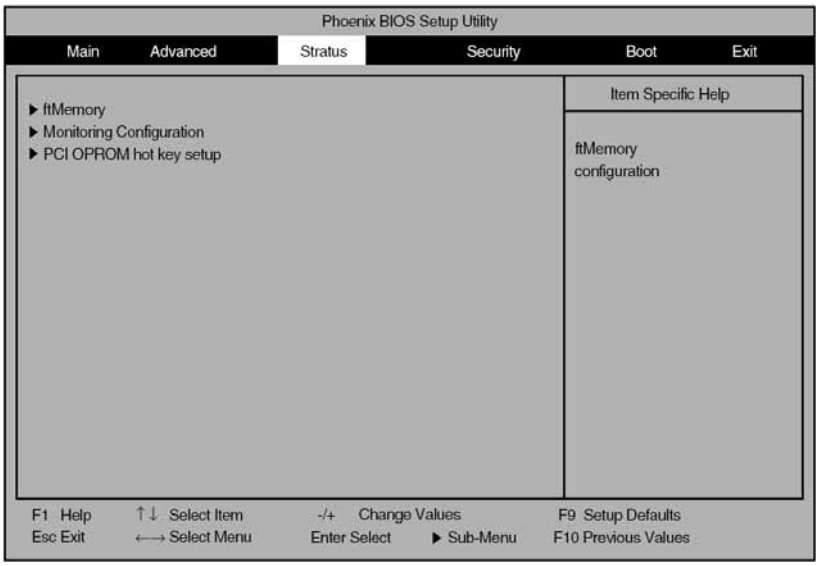
Option	Parameter	Description	Your Setting
Serial Port Address	[Disabled] On-board COM B	Select a serial port to connect the HW console. Selecting "On-board COM B" changes "Boot-time Diagnostic Screen" to "Enabled".	
Baud Rate	[9600] 19.2K 57.6K 115.2K	Select a baud rate for communications with the connected HW console.	
Console Type	VT100 VT100, 8bit PC ANSI, 7bit [PC ANSI] VT100+ VT-UTFS	Select a HW console type.	
Flow Control	[None] XON/XOFF	Select a flow control method.	
Console Connection	[Direct] Via modem	Select a connection with the HW console.	
Continue C.R after POST	Off [On]	Enable or disable Console Redirection after the operating system is loaded.	

[ ]: Factory-set

Stratus

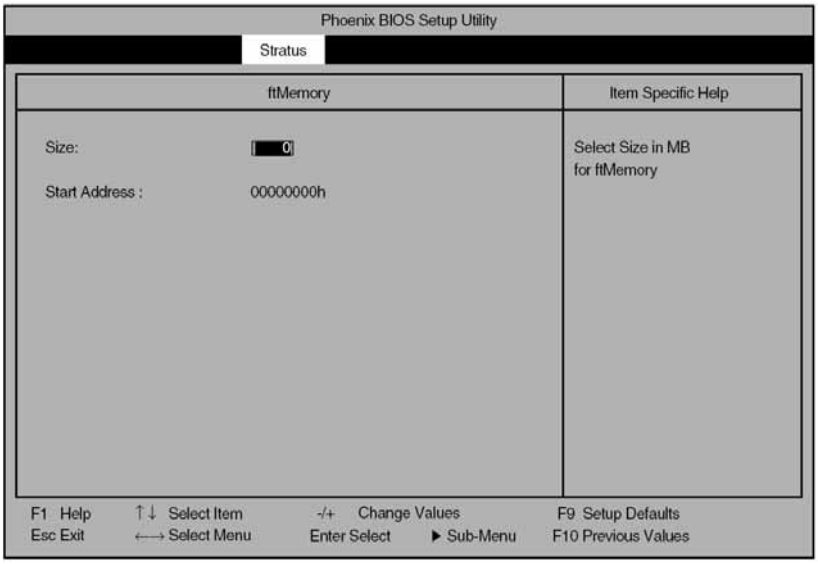
Move the cursor onto "Stratus" to display the Stratus menu.

The Stratus menu screen contains no options for setup. Display the respective submenu for each option for setup. Select an option and press **Enter** to display its submenu.



ft Memory

Select "ft Memory" on the Stratus menu and press **Enter** to display the following screen.



See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Size	[0]	Size of ft Memory is specified.	
Start Address	-	Shows the start address of ft Memory (view only)	

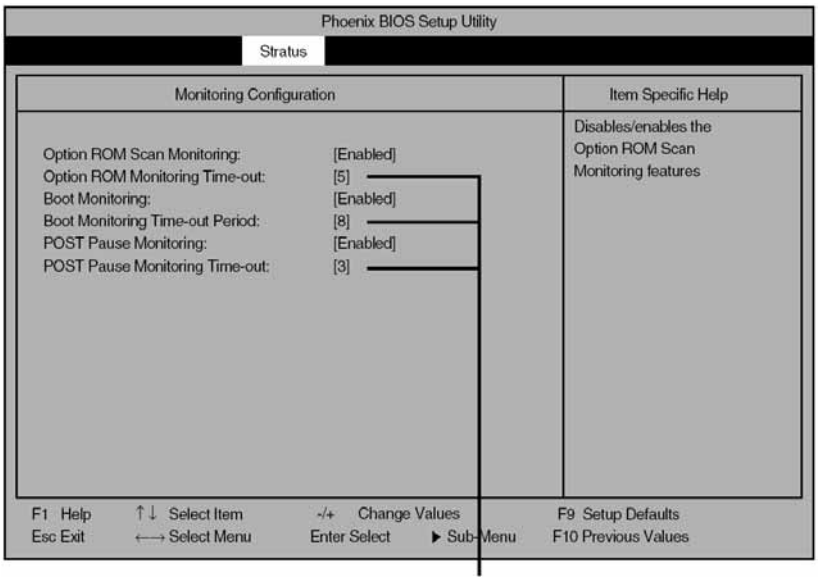
[ ]: Factory-set

IMPORTANT:

- Unless you use ft Memory, do not change the factory setting.
- To use ft Memory, you need to prepare an "ft Memory RAM Disk."
- If you specify/change the size of ft Memory on the ft Memory RAM Disk (not this menu), the changes will take effect automatically.
- For details, see manuals included with the ft Memory RAM Disk.

Monitoring Configuration

Select "Monitoring Configuration" on the Stratus menu to display the following screen.



Displayed only when "Enabled" is selected for "Option ROM Scan Monitoring", "Boot Monitoring" or "POST Pause Monitoring".

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Option ROM Scan Monitoring	Disabled [Enabled]	Enable or disable the Option ROM scan monitoring feature.	
Option ROM Monitoring Time-out	1 - [5] - 20	Specify the Option ROM monitoring time-out period. This option is displayed only when "Enabled" is selected for "Option ROM Scan Monitoring".	
Boot Monitoring	Disabled [Enabled]	Enable or disable the boot monitoring feature. This function is unique to NEC Express5800/ ft series: detects errors until the OS boots up, and immediately reboots the OS upon detection of an error. (For details, see "Behavior at Occurrence of Error" in Chapter 2.) Enable this function if NEC ESMPRO Agent is installed on the OS. Disable this function if NEC ESMPRO Agent is not installed or when you install the OS. Otherwise, the OS will boot up after "Specified boot timeout."	

Option	Parameter	Description	Your Setting
Boot Monitoring Time-out Period	1 - [10] - 20	Specify the boot monitoring time-out period. This option is displayed only when "Enabled" is selected for "Boot Monitoring". If you specify a shorter period of time to "Boot Monitoring Time-out Period", the time until rebooting can be reduced. When there is no external device connected, it is possible to set a shorter period of time, but 3 minutes or longer is recommended. Appropriate value for the setting varies depending on your environment. Therefore, when changing this setting, evaluate it thoroughly after constructing the environment.	
POST Pause Monitoring	Disabled [Enabled]	Enable or disable the POST monitoring feature during boot-up restriction.	
POST Pause Monitoring Time-out	1 - [3] - 20	Specify the POST monitoring time period during boot-up restriction.	

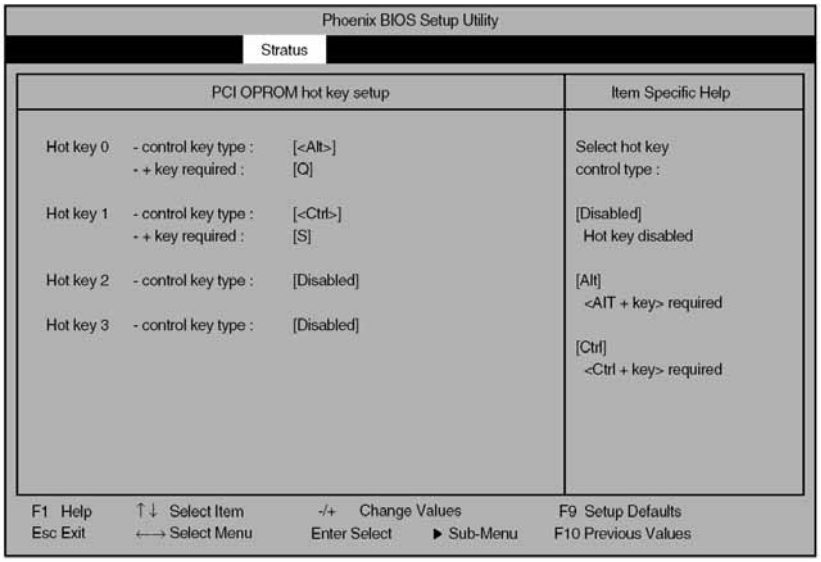
[ ]: Factory-set

IMPORTANT:

- When connecting a Fibre Channel disk array device, change the set value of "Boot Monitoring Time-out Period" depending on the wait time for the completion of the Fibre Channel disk array device initialization.
- If the wait time for the completion of the Fibre Channel disk array device initialization is 4 minutes, change the value of "Boot Monitoring Time-out Period" from 10 (default) to 14 minutes.
- If you set a small value for “Boot Monitoring Time-out Period”, you can shorten the waiting time to the rebooting. It recommended to set a value of more than 3 minutes though smaller value setting is available when external devices are not used. As it depends on the user’s setting environment, make sure to execute enough evaluation after the configuration of the environment.

PCI OPROM hot key setup

Select "PCI OPROM hot key setup" on the Stratus menu to display the following screen.



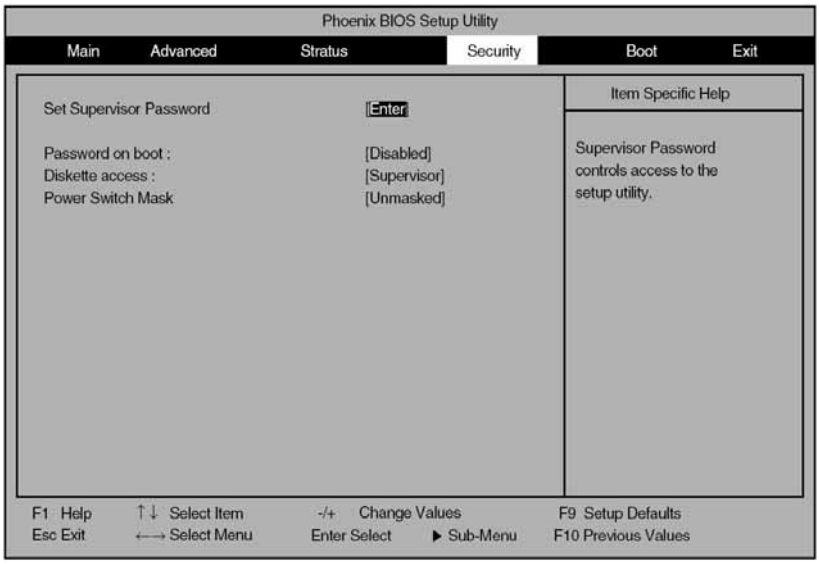
See the table below for setup options on the screen.

Option		Parameter	Description	Your Setting
Hot key 0	- control key type	Disabled [<Alt>] <Ctrl> <Alt or Ctrl>	Set hot key.	
	- + key required	[Q]		
Hot key 1	- control key type	Disabled <Alt> [<Ctrl>] <Alt or Ctrl>		
	- + key required	[S]		
Hot key 2	- control key type	[Disabled] <Alt> <Ctrl> <Alt or Ctrl>		
Hot key 3	- control key type	[Disabled] <Alt> <Ctrl> <Alt or Ctrl>		

[ ]: Factory-set

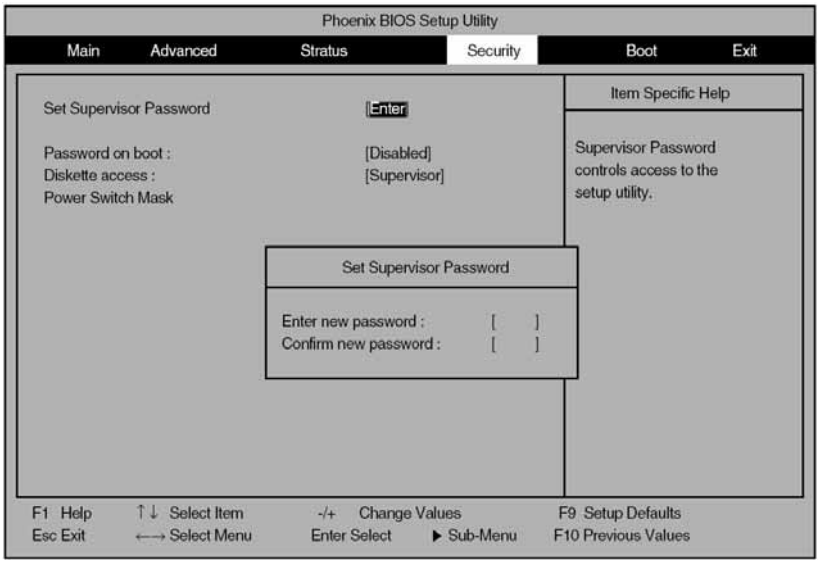
Security

Move the cursor onto "Security" to display the Security menu.



Select "Set Supervisor Password" and press **Enter** to display the following pop-up screen.

Set a password on this pop-up screen. Enter a password of up to seven alphanumeric characters and symbols from the keyboard.



IMPORTANT: Do not set any password before installing the OS.

See the table below for setup options on the screen.

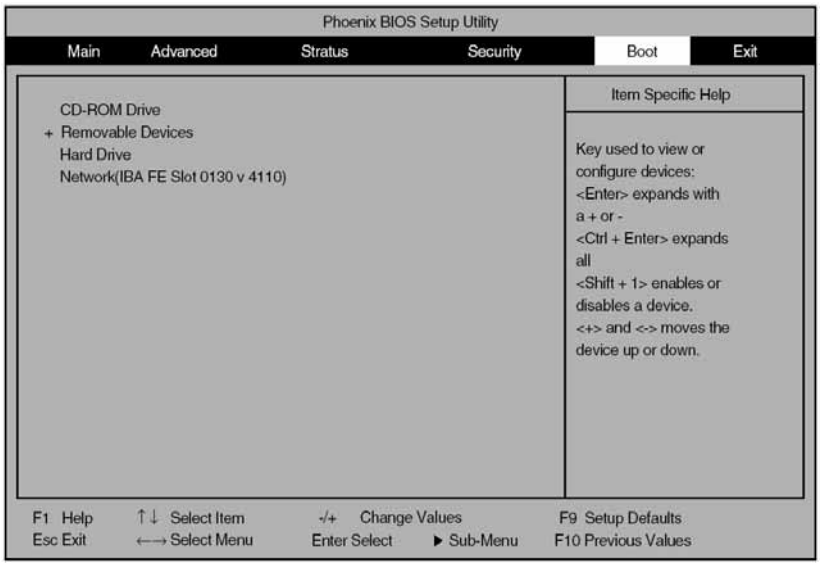
Option	Parameter	Description	Your Setting
Set Supervisor Password	Up to 7 alphanumeric characters	Press **Enter** to display the supervisor password entry screen. With the supervisor password, all SETUP menus are available for access. This option is available only when you log into the SETUP utility with the supervisor password.	
Password on boot	[Disabled] Enabled	Specify whether to request a password entry at boot-up. Supervisor password setup is required beforehand. When the supervisor password is specified and this option is disabled, the BIOS assumes that a system boot attempt is made by a user.	
Diskette access	Everyone [Supervisor]	Enable or disable password prompt that allows access to the floppy disk drive.	
Power Switch Mask	Masked [Unmasked]	Enable or disable the POWER switch on the server. If "Masked" is selected, power-off with the POWER switch becomes unavailable after OS boot-up. (Forced shut down also becomes unavailable. Forced shut down is a feature to shut down by pressing the POWER switch for over four seconds.)	

[ ]: Factory-set

Boot

Move the cursor onto "Boot" to display the Boot menu.

The server searches for the boot device according to the order specified in this menu and use the software to boot the system if found.

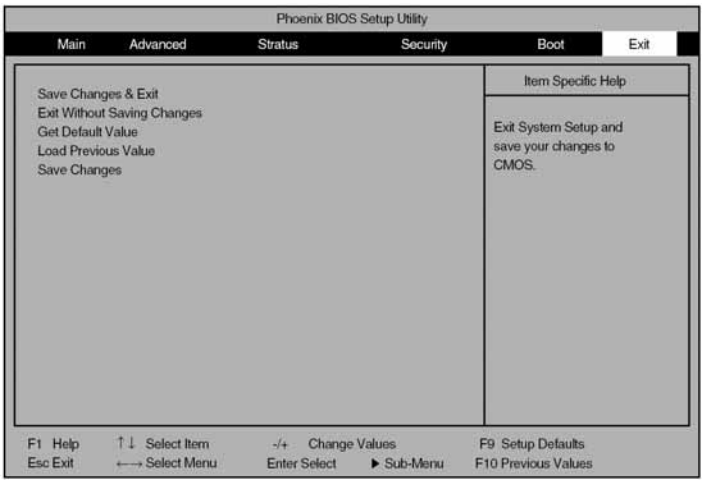


You can change the boot device order using ↑ or ↓ and + or –. Move the cursor to select the device by ↑ or ↓, and then change the priority using + or –.

IMPORTANT: Specify the device boot order as shown above to start the NEC EXPRESSBUILDER.

Exit

Move the cursor onto "Exit" to display the Exit menu.



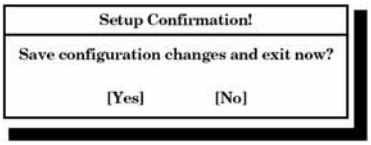
The following describes each option on the Exit menu.

Always you can abort the selected submenu and return to the Exit menu by pressing **Esc**.

- Save Changes & Exit

  Select this option to save the current configuration data into the CMOS memory and exit the SETUP utility.

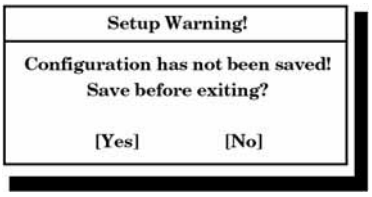
  The following screen appears:



  Select "Yes" and press **Enter** to save the current configuration data into the CMOS memory and exit the SETUP utility. The server will automatically restart the system.

- Exit Without Saving Changes

  Select this option to discard the current configuration data and exit the SETUP utility.

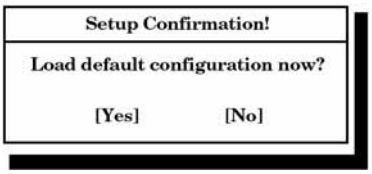


  Select "No" and press **Enter** to discard the current configuration data and exit the SETUP utility. Select "Yes" and press **Enter** to save the current configuration data into the CMOS memory, to exit the SETUP utility, and to restart the server automatically.

- Get Default Value

  Select this option to restore all default values of the SETUP utility.

  The following screen appears:



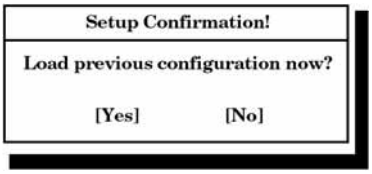
  Select "Yes" and press **Enter** to restore default values. Select "No" and press **Enter** to return to the Exit menu screen.

> **IMPORTANT:** The default value slightly differs from the factory-set value. Check all setting values before restoring the default value.

- Load Previous Values

  Select this option to discard the current configuration data and restore the previous configuration data.

  The following screen appears:

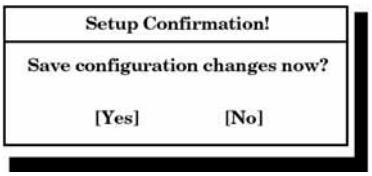


  Select "Yes" and press **Enter** to discard the current configuration data and restore the previous one.

- Save Changes

  Select this option to save the current configuration data into the CMOS memory and stay on the SETUP utility.

  The following screen appears:



  Select "Yes" and press **Enter** to save the current configuration data into the CMOS memory.

SCSI BIOS ~ *Fast!*UTIL ~

For several settings of the SCSI controller, the SCSI BIOS utility "*Fast!*UTIL" is used.

The SCSI BIOS utility can be started by simple key manipulations during execution of POST without use of a special start disk.

The SCSI BIOS built in the server is set to the optimum at the shipment. Accordingly, the SCSI BIOS may not be changed by using this utility.

IMPORTANT:

- Leave the settings for the SCSI controller to which built-in hard disks are connected as they are at shipment.
  The controllers installed in each module must be configured individually.
- *Fast!*UTIL of the latest version is installed in the NEC Express5800/ft series. Accordingly, the setting screen may be different from that described in this document. See the online help or contact your service representative for the setting items different from those in this document.

Start

The procedure of starting *Fast!*UTIL is described below.

Notes

Note the following before starting *Fast!*UTIL.

- Settings for built-in hard disk

  Leave the settings for the built-in hard disk as they are at shipment. The built-in host adapter is specified as QLA12160 Ultra3 2400 in the Select Host Adapter dialog box.

- Settings of built-in SCSI controller installed in each group

  - Mount only the PCI module which has the built-in SCSI controller that you want to check the settings and start *Fast!*UTIL. Remove the other PCI module from the system.
  - Do not change the factory settings of the built-in SCSI controller.
  - Although there may be descriptions that the SCSI BIOS of the host adapter needs to be configured in manuals for tape devices, etc., this server does not require modifications to the settings. Do not change the settings.

Start Procedure

Start *Fast!*UTIL in the procedure below:

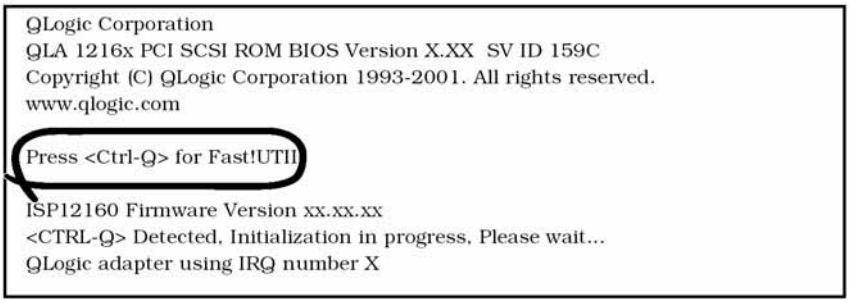
1. Turn on the power of the server.

   The start message appears on a screen in the middle of POST.

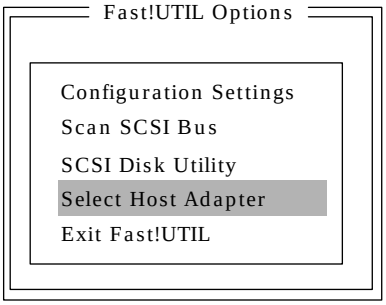
2. Press **Q** and **Ctrl** together.

   *Fast!*UTIL is started.

   IMPORTANT: Press these keys before message "QLogic Adapter using IRQ number x" or later appears.



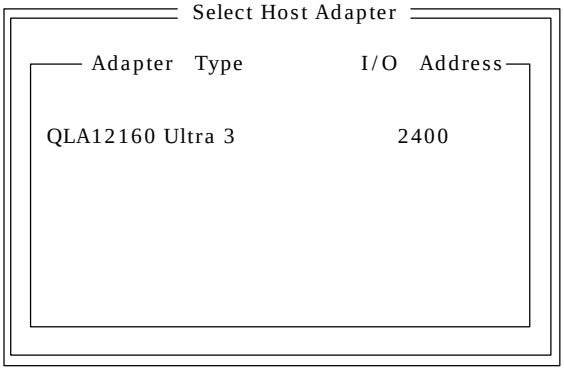
3. Highlight "Select Host Adapter" using the cursor keys and press **Enter**.



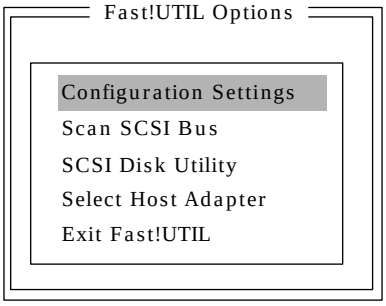
4. Select the proper adapter.

> **IMPORTANT:** The adapter "QLA12160 Ultra3 2400" is used for built-in hard disk.

Highlight the displayed item with the cursor keys and press **Enter**.

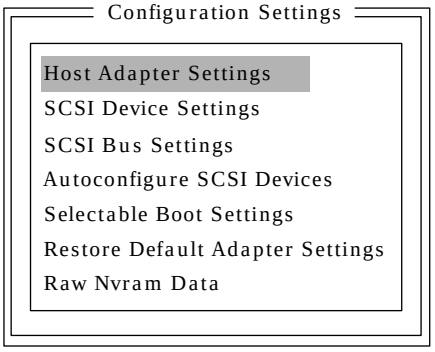


The display returns to "Fast!UTIL Options". The name of the selected host adapter appears at the upper left corner of the screen.



Configuration Settings

If you select "Configuration Settings" from the "Fast!UTIL Options" menu, the screen for setting the configuration appears.



Host Adapter Settings

If you put the cursor on "Host Adapter Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the host adapter appears.

The table below shows the parameters of the setting items and their settings at shipment.

Submenu item	Parameter	Description
BIOS Address	–	View only
BIOS Revision	–	View only
Interrupt level	–	View only
Host Adapter BIOS	[Enabled] Disabled	Specify whether the BIOS extension of the host adapter is enabled or disabled.
PCI Bus DMA Burst	[Enabled] Disabled	Specify whether the DMA burst transfer on the PCI bus is enabled or disabled.
CDROM Boot	Enabled [Disabled]	Specify whether the start from CD-ROM is enabled or disabled.
Adapter Configuration	[Auto] Manual Safe	Specify whether the adapter configuration is set automatically by BIOS, manually, or safely.
Drivers Load RISC Code	[Enabled] Disabled	Specify whether the load of RISC codes is enabled or disabled.
>4GByte Addressing	Enabled [Disabled]	Specify whether hard disks of 4 GB or larger is used or not.
Fast Command Porting	[Enabled] Disabled	Leave this item as factory-set.

[ ]: Factory-set

SCSI Device Settings

If you put the cursor on "SCSI Device Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the device connected to the host adapter appears.

The table below shows the parameters of the setting items and their settings at shipment.

IMPORTANT: The settings can be done in SCSI buses. The settings at shipment are the same for both SCSI bus 0 and SCSI bus 1.

Submenu item	Parameter	Description
Disconnects OK	[Yes] No*	Specify whether the disconnection of SCSI devices from the SCSI bus is enabled or disabled. * "No" must be selected for ID8.
Check Parity	[Yes] No	Specify whether the parity check is provided or not.
Enable LUNs	[Yes] No	Specify whether more than one LUN numbers are given to SCSI ID.
Enable PPR	Yes [No]	Leave this item as factory-set.
Enable Device	[Yes] No	Leave this item as factory-set.
Negotiate Wide	[Yes] No*	Specify whether the wide (32 bits) transfer is enabled or disabled. * "No" must be selected for ID8.
Negotiate Sync	[Yes] No*	Specify whether the synchronous transfer is enabled or disabled. * "No" must be selected for ID8.
Tagged Queuing	[Yes] No*	Leave this item as factory-set. * "No" must be selected for ID8.
Sync Offset	00, 02, 04, 06, 08, 10, 12, 14, 16, 18, 20, 22, [24]	Select the proper offset value in synchronous transfer.
Sync Period	[Ultra3 9 = 160MB/s] Ultra2 10 = 80MB/s Ultra 12 = 40MB/s Fast 25 = 20MB/s 40 = 12.5MB/s	Select the proper speed in synchronous transfer.
Exec Throttle	1, 4, 8, [16], 32, 64, 128, 255	Leave this item as factory-set.

[ ]: Factory-set

SCSI Bus Settings

If you put the cursor on "SCSI Bus Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the SCSI bus of the host adapter appears.

The table below shows the parameters of the setting items and their settings at shipment.

IMPORTANT: The settings can be done in SCSI buses. The settings at shipment are the same for both SCSI bus 0 and SCSI bus 1.

Submenu item	Parameter	Description
SCSI Bus SCSI ID	0, 1, 2, 3, 4, 5, 6, [7], 8, 9, 10, 11, 12, 13, 14, 15	Select the SCSI ID given to SCSI bus.
SCSI Bus Reset	[Enabled] Disabled	Make the reset valid or invalid in SCSI buses.
SCSI Bus Reset Delay	0, 1, 2, 3, 4, [5], 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	Leave this item as factory-set.
SCSI Bus Termination	Auto High only Disabled [Enabled]	Set the termination resistance of SCSI bus.

[ ]: Factory-set

Autoconfigure SCSI Device

If you put the cursor on "Autoconfigure SCSI Device" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the device connected to the host adapter appears.

The parameters of the setting items and their settings at shipment are the same as those shown in the table for "SCSI Device Settings".

IMPORTANT:

- The settings can be done in SCSI buses and SCSI IDs. Check the SCSI ID of the target device before changing the settings.
- The settings at shipment are the same for both SCSI bus 0 and SCSI bus 1.
- The following items can be changed by setting "Adapter Configuration" in "Host Adapter Settings" to "Manual".
  – Enable Device
  – Enable LUNs
  – Negotiate Wide
  – Negotiate Sync
  – Tagged Queuing
  – Sync Offset
  – Sync Period
  – Exec Throttle

Selectable Boot Settings

If you put the cursor on "Selectable Boot Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the start from the device connected to the host adapter appears.

Submenu item	Parameter	Description
Selectable SCSI Boot	Enabled [Disabled]	Specify whether the boot from SCSI device can be selected or not.
SCSI Bus	[0] 1	Select the bus to which the boot SCSI device is connected.
SCSI Boot ID	[0], 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	Set the SCSI ID of the boot SCSI device.
SCSI Boot Lun	[0], 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	Select the LUN number to which the boot SCSI device is bound.

[ ]: Factory-set

Restore Default Adapter Settings

If you put the cursor on "Restore Default Adapter Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the display changes to the screen for returning the setting values to the default values.

IMPORTANT: The default values can be restored in SCSI buses.

Raw Nvram Data

If you put the cursor on "Raw Nvram Data" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the information on NvRAM installed in the host adapter is displayed in the hexadecimal format.

This function is provided to solve problems. The information cannot be edited.

Scan SCSI Bus

If you select "Scan SCSI Bus" from the "Fast!UTIL Options" menu, the list of devices connected to each SCSI bus is displayed in the order of SCSI IDs. The information to be displayed includes the device manufacturer, product name, and firmware revision.

SCSI Disk Utility

If you select "SCSI Disk Utility" from the "Fast!UTIL Options" menu, the utility menu appears which is used to format or verify the connected SCSI devices.

IMPORTANT:

- Devices can be processed in SCSI buses and SCSI IDs. Be careful not to forget the selected bus and ID.
- When performing low-level format, select [Advanced] – [Monitoring Configuration] – [Option ROM Scan Monitoring] and choose “Disabled” in BIOS setup utility. See “SYSTEM BIOS ~ SETUP ~” (page 4-2) for details of the setting.
- The selection of "Continue With Format" in "Low-Level Format" causes all data in disks to be lost.
- If you select “Select Host Adapter” from the “Fast!UTIL Options” menu, the list of the host adapters installed in the main system is displayed. Select an adapter to change its settings.

- Low-Level Format

  Formats physically the device selected in "Continue With Format". If you select "Do Not Format Disk", the menu displayed just before appears again.

- Verify Disk Media

  Verifies the device selected in "Continue With Verify". If you select "Do Not Verify Media", the menu displayed just before appears again.

- Select Different Disk

  Selects another SCSI device on the same SCSI bus.

Select Host Adapter

If you select "Select Host Adapter" from the "Fast!UTIL Options" menu, the list of the host adapters installed in the system is displayed. Select an adapter to change its settings.

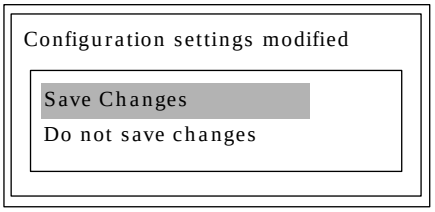
IMPORTANT: The adapter "QLA12160 Ultra3 2400" is used for built-in hard disk.

The utility menu appears which is used to format or verify the connected SCSI devices.

Exit *Fast!*UTIL ~ Termination and Storage of *Fast!*UTIL ~

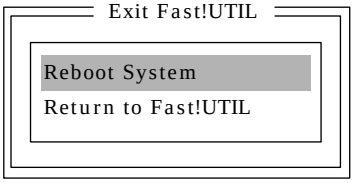
After modifying the settings, press **Esc** several times to display the "Fast!UTIL Options" menu. If you select "Exit Fast!UTIL" from the menu, the screen for terminating *Fast!*UTIL appears.

However, if the settings are different from those before the start, the screen prompting you to save the settings appears before the display of the termination screen.



Select either "Save Changes" or "Do not save changes" by using keyboard cursors (↓ and ↑) and press **Enter**.

Pressing **Enter** causes the screen for terminating *Fast!*UTIL to appear.



Select either "Reboot System" or "Return to Fast!UTIL" and press **Enter**.

Setting List for Optional SCSI Device

If you add an optional SCSI device, don’t change the factory settings of built-in SCSI controller.

For information on optimal SCSI devices for NEC Express5800/ft series, contact your sales agent.

RESET AND FORCED SHUTDOWN

Read this section if your server does not operate as expected, or if you want to resume all setup values to those made at shipment.

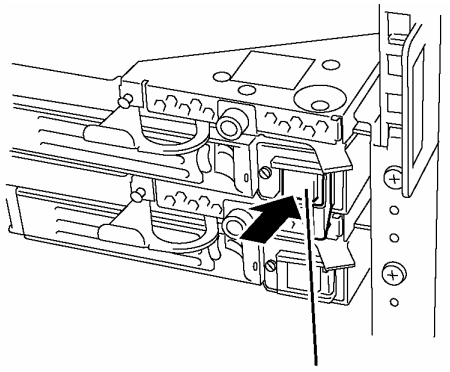
Resetting the Server

If the server halts before starting the OS, press **Ctrl** + **Alt** + **Delete**. This restarts the server.

IMPORTANT: Resetting the server clears the DIMM memory and the data in process. To reset the server when it is not frozen, make sure that no processing is in progress.

Forced Shutdown

Use this function when an OS command does not shut down the server, the POWER switch does not turn off the server, or resetting does not work. Press and hold the POWER switch on the server for over four seconds.



Press this button for at least four seconds.

To turn on the power back again, wait approximately 30 seconds after turning off the power (forced shutdown).

IMPORTANT: If the remote power-on feature is used, cycle the power once to load the OS, and turn off the power again in the normal way.

Clear CMOS / Password (Configuring Motherboard Jumpers)

With the pre-installed SETUP utility, you can set desired passwords to protect data stored on the server from unauthorized user access. If you forget the passwords, you can clear them by following the procedure described in this section.

You can also use the same procedure to clear the CMOS data in the server.

IMPORTANT:

- Clearing the CMOS data restores the factory settings.
- To clear passwords or CMOS data, power off the server.
- NEC recommends that you request a maintenance engineer of your service representative having the expert knowledge on the server to clear the CMOS data and password.

(This page is intentionally left blank.)

Chapter 5

Installing and Using Utilities

This section describes how to use the NEC EXPRESSBUILDER CD-ROM that comes with your server and to install the utilities stored on the NEC EXPRESSBUILDER.

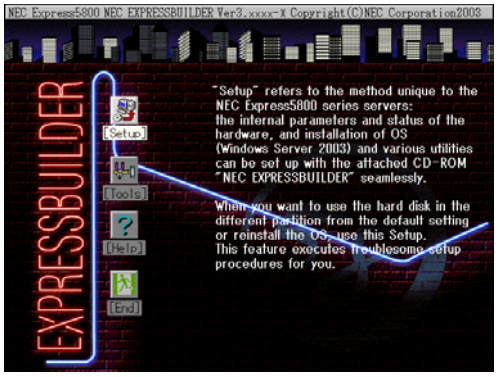
NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER, integrated setup software, can automatically detect the hardware connected to an NEC Express5800/ft series machine to advance the processing. The hardware subject to setup with the NEC EXPRESSBUILDER should have the same configuration as that for operation.

Start Menu

The NEC EXPRESSBUILDER provides two procedures to start the server as described below. The menus and items appearing on the screen vary depending on the procedures.

- Booting (starting) the server from NEC EXPRESSBUILDER CD-ROM



For the procedure, insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the NEC Express5800/ft series and start the NEC Express5800/ft series from the system in the NEC EXPRESSBUILDER. When the NEC Express5800/ft series is started by using this procedure, the NEC EXPRESSBUILDER top menu shown above appears.

Perform the NEC Express5800/ft series setup from this menu.

IMPORTANT:

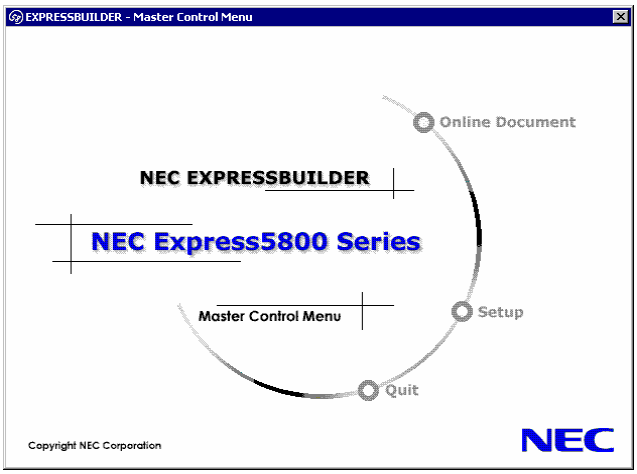
- Don’t use this CD-ROM on computers other than NEC Express5800/ft series with which it is packaged (including other NEC Express5800 models). Otherwise, a breakdown may result.
- The execution of "Setup" of the menu causes the OS installed previously to be erased. OS must also be reinstalled.

See "NEC EXPRESSBUILDER Top Menu" for details.

- Inserting NEC EXPRESSBUILDER CD-ROM after Windows startup

  The "Master Control Menu" (see figure below) starts automatically after you place the "NEC EXPRESSBUILDER" in the CD-ROM drive. A dialog box called "Master Control Menu" will appear.

  For this dialog, see "Master Control Menu" described later.



NEC EXPRESSBUILDER Top Menu

The NEC EXPRESSBUILDER top menu is used for the setup of hardware and the setup and installation of OS.

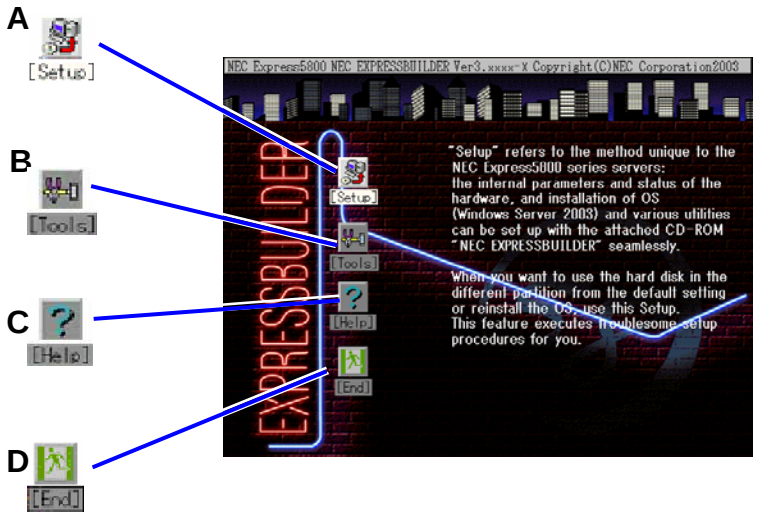
Start

Start the NEC EXPRESSBUILDER top menu following the procedure below:

1. Turn on the powers of peripherals and the power of the server in this order.
2. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.
3. After the CD-ROM is inserted, reset the system (by pressing **Ctrl** + **Alt** + **Delete**) or turn off the power and then on again to restart the server.

   The system is activated from the CD-ROM to start the NEC EXPRESSBUILDER.

After the NEC EXPRESSBUILDER is started, the NEC EXPRESSBUILDER top menu shown below appears.



A Setup
Performs various automatic setup operations including settings of internal parameters and states of hardware and installations of Windows Server 2003, Enterprise Edition and several utilities. Select this setup procedure if hard disks are used in a partition different from that defined at the purchase, or if OS is reinstalled.

B Tools
Starts each of the utilities stored in the NEC EXPRESSBUILDER individually to allow the operator to provide setup. Enables the setup without influence of installed OS.

C Help
Describes the NEC EXPRESSBUILDER. We recommend you to read through the help before the setup.

D End
The NEC EXPRESSBUILDER termination screen appears.

Setup

The setup program is exclusively used for your server to perform automatic setup operations within the range from the settings of internal parameters and states of hardware to the installation of Windows Server 2003, Enterprise Edition and several utilities.

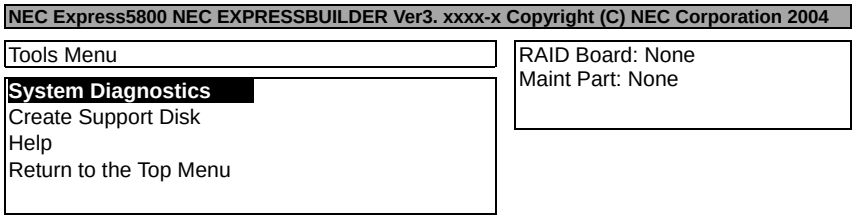
Use the setup program if hard disks are used with a partition different from that at purchase, or if OS is reinstalled. This feature carries out the complicated setup.

IMPORTANT:

- To install Windows Server 2003, Enterprise Edition in your server, use the setup program (excluding the case of performing the setup for the first time after the purchase). Any other methods cannot install Windows Server 2003, Enterprise Edition in the server.
- Because the setup is started from its first stage, the execution of the setup causes the data in the hard disk to be erased.

Tools

The Tools Menu is used to run the system diagnosis program or create the support disks. The items in the Tools Menu are described below.



- System Diagnostics

  Executes several tests on the main system to examine the features of the system and the connections between the system and extension boards. If the system diagnosis is executed, the system check program is started depending on the system status. See the description in Chapter 6 to manipulate the system check program

- Create Support Disk

  In the support disk creation procedure, the starting support disk for starting a utility within the NEC EXPRESSBUILDER from a floppy disk and the support disk required in the installation of the operating system can be created. If you write down the titles appearing on the screen on the floppy disk labels, they can be easily managed later.

  The customer should prepare the floppy disks for creating the support disks.

  – Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER
    Creates a support disk required for recovering the system.

  – ROM-DOS Startup FD
    The support disk for starting the ROM -DOS system is created.

  – System Diagnostics Utility FD
    The support disk for starting the system check program is created.

- Help

  Indicates the descriptions on several features of the NEC EXPRESSBUILDER.

- Return to the Top Menu

  Indicates the NEC EXPRESSBUILDER top menu.

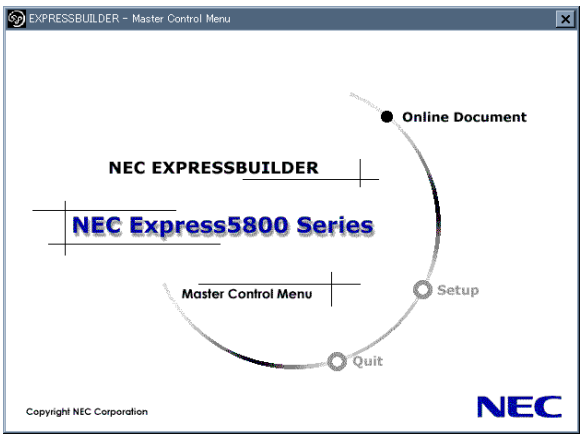
Master Control Menu

The Master Control Menu is used to:

- Read documentation,
- Install the management software, and
- Install the viewer application (Adobe Acrobat Reader).

NOTES:

- Master Control Menu requires Microsoft Windows 95 (or later) or Windows NT 4.0 (or later).
- Some documents are written by the PDF format.
  Use the Adobe Acrobat Reader to read these documents.



Put the NEC EXPRESSBUILDER CD-ROM in the CD-ROM drive. Master Control Menu automatically appears on the screen. If the Autorun feature is invalid in your system, run the \MC\1ST.EXE file in the CD-ROM directly. Some items are grayed-out when the logon user does not have the authority of the Administrator or the system does not meet the requirements to install the application.

To use Master Control Menu:

- Click [Online Document], [Setup] or [Quit], or
- Right-click Master Control Menu window.

NEC ESMPRO Agent AND Manager

NEC Express5800/ft series system management applications "NEC ESMPRO Manager" and "NEC ESMPRO Agent" are bundled to accessory "NEC EXPRESSBUILDER CD-ROM."

This manual describes the functions and features provided by NEC ESMPRO Manager and NEC ESMPRO Agent and the notes on their operations.

These applications are necessary for continuous operation of NEC Express5800/ft series.

Overview

NEC ESMPRO Manager and NEC ESMPRO Agent are the server management software provided for the stable operation of a server system and effective system operations. They can manage the configuration information and operating status of server resources to prevent server faults from occurring. If a server fault occurs, they detect the fault to notify the system Administrator of the occurrence. This enables the system Administrator to take appropriate action against faults.

- Importance of server management

  "Constantly stable operation" and "less management workload" are keywords in server management.

  – Stable operation of server

    Shutdown of a server immediately leads the customer to lose business opportunities and profits. This requires servers to always operate in their perfect state. If a fault occurs in a server, it is necessary to detect the occurrence as soon as possible, make clear the cause, and take appropriate action. The shorter the time taken from the occurrence of a fault to the recovery from the fault is, the smaller the loss of profits (and/or costs) is.

  – Load reduction of server management

    The server management requires many jobs. In particular, if the system becomes large or remote servers are used, required jobs increase further. The reduction of the load of the server management brings the decrease in costs (and thus customer's benefit).

- What are NEC ESMPRO Manager and NEC ESMPRO Agent?

  NEC ESMPRO Manager and NEC ESMPRO Agent are server management software used to manage and monitor NEC Express5800 series systems on the network. The installation of NEC ESMPRO Manager and NEC ESMPRO Agent enables the server configuration, performance, and fault information to be acquired, managed, and monitored realtime and also the occurrence of a fault to be detected immediately by the alert report function.

- Effects of using NEC ESMPRO Manager and NEC ESMPRO Agent

  NEC ESMPRO Manager and NEC ESMPRO Agent have sufficient effects on a variety of needs in versatile and complicated system environments.

  – Detection of server fault

    NEC ESMPRO Agent collects a variety of fault information on NEC Express5800 series systems to identify the states of the systems. If a server detects a fault, the server provides NEC ESMPRO Manager with the proper alert report.

  – Prevention of server fault

    NEC ESMPRO Agent includes the preventive maintenance function predicting the occurrence of a fault in advance as countermeasures for preventing faults from occurring. It can previously detect the increase in the cabinet temperature and the empty capacity in a file system.

  – Management of server operation status

    NEC ESMPRO Agent can acquire the detailed hardware configuration and performance information on NEC Express5800 series systems. The acquired information can be viewed at any point through NEC ESMPRO Manager.

  – Collective management of distributed servers

    NEC ESMPRO Manager provides the GUI interface that allows servers distributed on the network to be managed efficiently.

Detection of Server Fault

NEC ESMPRO Manager and NEC ESMPRO Agent detect errors causing faults to occur at an early stage and notify Administrators of fault information real-time.

- Early detection of error

  If a fault occurs, NEC ESMPRO Agent detects the fault and reports the occurrence of the fault to NEC ESMPRO Manager (alert report). NEC ESMPRO Manager displays the received alert in the alert viewer and also changes the status colors of the server and server component in which the fault occurs. This allows you to identify the fault at a glance. Further, checking the content of the fault and the countermeasures, you can take appropriate action for the fault as soon as possible.

- Types of reported faults

  The table below lists the typical faults reported by NEC ESMPRO Agent.

Component	Reported information
CPU	• CPU load is over the threshold • CPU degrading, etc.
Memory	ECC 1-bit error detection, etc.
Power supply	• Voltage lowering • Power failure, etc.
Temperature	Temperature increase in cabinet, etc.
Fan	Fan failure (decrease in the number of revolutions), etc.
Storage	File system usage rate, etc.
LAN	• Line fault threshold over • Send retry or send abort threshold over, etc.

Prevention of Server Fault

NEC ESMPRO Agent includes the preventive maintenance function forecasting the occurrence of a fault as countermeasures for preventing faults from occurring.

NEC ESMPRO Manager and NEC ESMPRO Agent can set the threshold for the CPU usage rate and the empty capacity in a file system, etc. in the server. If the value of a source exceeds the threshold, NEC ESMPRO Agent reports the alert to NEC ESMPRO Manager.

The preventive maintenance function can be set for a variety of monitoring items including the CPU usage rate.

Management of Server Operation Status

NEC ESMPRO Agent manages and monitors a variety of components installed in the server. You can view the information managed and monitored by NEC ESMPRO Agent on the data viewer of NEC ESMPRO Manager.

NEC ESMPRO Agent also manages and monitors components and conditions required to keep the server reliability at a high level such as hard disks, CPU, fans, power supply, and temperature.

Monitoring (Management) of NEC Express5800/ft series

NEC Express5800/ft series is a fault tolerant system. It can continue the operation even if a major component fails. NEC Express5800/ft series improves the system availability with the hardware, NEC ESMPRO, and system software functions.

If a major component fails, the NEC ESMPRO fault report function can notify the system Administrator of the occurrence of the fault. In addition, the data viewer of NEC ESMPRO Manager can monitor the system status and also identify the failed component.

NEC ESMPRO provides several maintenance functions such as the update of F/W and BIOS in the NEC Express5800/ft series in the online state (in which the system continues the operation but the components used to update F/W or BIOS is suspended) and the suspension of a specific component.

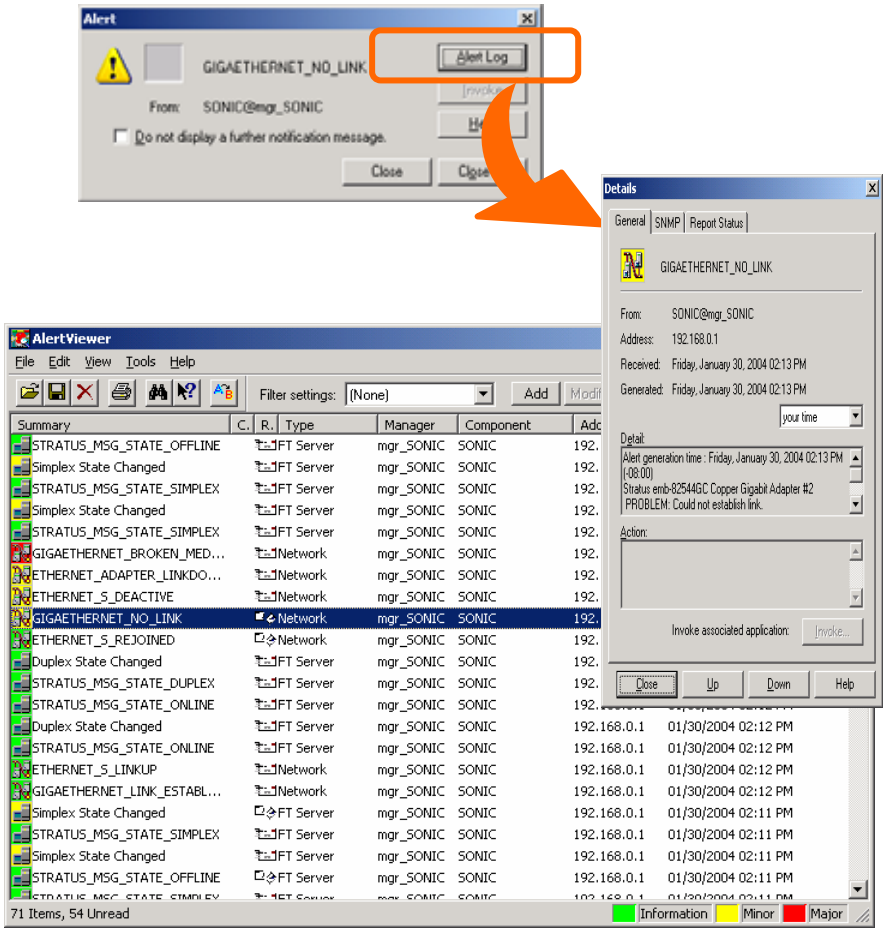
The table below lists the NEC Express5800/ft series management tasks using NEC ESMPRO and system functions.

NEC Express5800/ft series management task	**NEC ESMPRO function or tool (on managed NEC Express5800/ft series)***	**NEC ESMPRO function or tool (on management manager)**
Monitoring of major component states	–	NEC ESMPRO Manager data viewer
Diagnosis and start/stop of major components and F/W update	NEC ESMPRO Agent ft server utility	NEC ESMPRO Manager data viewer
Confirmation of alert or confirmation of fault occurrence event information	Event Viewer	NEC ESMPRO Manager Alert Viewer

* When the administration manager is also the managed NEC Express5800/ft series (or NEC ESMPRO Manager is installed on the managed NEC Express5800/ft series), all functions of the administration manager can be used on the managed NEC Express5800/ft series.

The report of a fault occurrence in the NEC Express5800/ft series (alert) is immediately sent to the NEC ESMPRO Manager. When the NEC ESMPRO Manager receives the alert, a popup message appears.

The alert contains the detailed information of the fault and the proper countermeasures. You can take the appropriate action for the alert.


Alert
GIGAETHERNET_NO_LINK
Alert Log
From: SONIC@mgr_SONIC
Do not display a further notification message.
Close
Details
General
SNMP
Report Status
GIGAETHERNET_NO_LINK
From: SONIC@mgr_SONIC
Address: 192.168.0.1
Received: Friday, January 30, 2004 02:13 PM
Generated: Friday, January 30, 2004 02:13 PM
your time
Detail:
Alert generation time : Friday, January 30, 2004 02:13 PM (-08:00)
Stratus emb-82544GC Copper Gigabit Adapter #2
PROBLEM: Could not establish link.
Action:
Invoke associated application:
Invoke...
Close
Up
Down
Help
AlertViewer
File Edit View Tools Help
Filter settings: (None)
Add
Summary C. R. Type Manager Component
STRATUS_MSG_STATE_OFFLINE FT Server mgr_SONIC SONIC
Simplex State Changed FT Server mgr_SONIC SONIC
STRATUS_MSG_STATE_SIMPLEX FT Server mgr_SONIC SONIC
Simplex State Changed FT Server mgr_SONIC SONIC
STRATUS_MSG_STATE_SIMPLEX FT Server mgr_SONIC SONIC
GIGAETHERNET_BROKEN_MED... Network mgr_SONIC SONIC
ETHERNET_ADAPTER_LINKDO... Network mgr_SONIC SONIC
ETHERNET_S_DEACTIVE Network mgr_SONIC SONIC
GIGAETHERNET_NO_LINK Network mgr_SONIC SONIC
ETHERNET_S_REJOINED Network mgr_SONIC SONIC
Duplex State Changed FT Server mgr_SONIC SONIC
STRATUS_MSG_STATE_DUPLEX FT Server mgr_SONIC SONIC
STRATUS_MSG_STATE_ONLINE FT Server mgr_SONIC SONIC
Duplex State Changed FT Server mgr_SONIC SONIC 192.168.0.1 01/30/2004 02:12 PM
STRATUS_MSG_STATE_ONLINE FT Server mgr_SONIC SONIC 192.168.0.1 01/30/2004 02:12 PM
ETHERNET_S_LINKUP Network mgr_SONIC SONIC 192.168.0.1 01/30/2004 02:12 PM
GIGAETHERNET_LINK_ESTABL... Network mgr_SONIC SONIC 192.168.0.1 01/30/2004 02:12 PM
Simplex State Changed FT Server mgr_SONIC SONIC 192.168.0.1 01/30/2004 02:11 PM
STRATUS_MSG_STATE_SIMPLEX FT Server mgr_SONIC SONIC 192.168.0.1 01/30/2004 02:11 PM
Simplex State Changed FT Server mgr_SONIC SONIC 192.168.0.1 01/30/2004 02:11 PM
STRATUS_MSG_STATE_OFFLINE FT Server mgr_SONIC SONIC 192.168.0.1 01/30/2004 02:11 PM
71 Items, 54 Unread
Information
Minor
Major

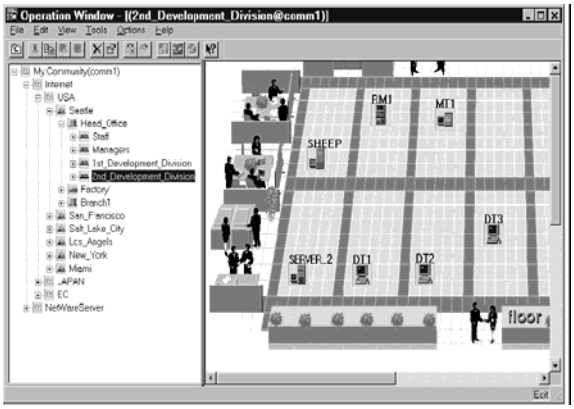
Collective Management of Distributed Servers

The excellent GUI provided by NEC ESMPRO Manager allows servers on a network to be managed collectively. The management screen is designed in the Explorer format to indicate the components in a server hierarchically for effective server management.

NEC ESMPRO Manager manages servers by using the following three types of GUIs.

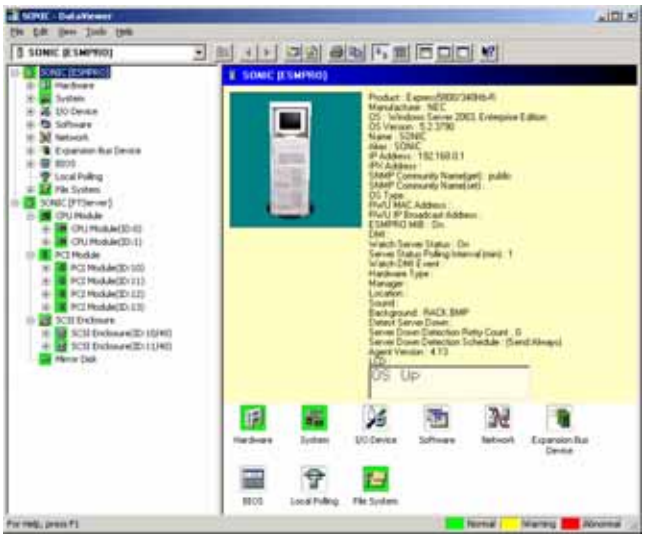
- Operation Window

  The operation window is used to create the map of servers connected to network to manage them. The map can be multi-layered depending on the installation areas, organizations, and objects.



- Data Viewer

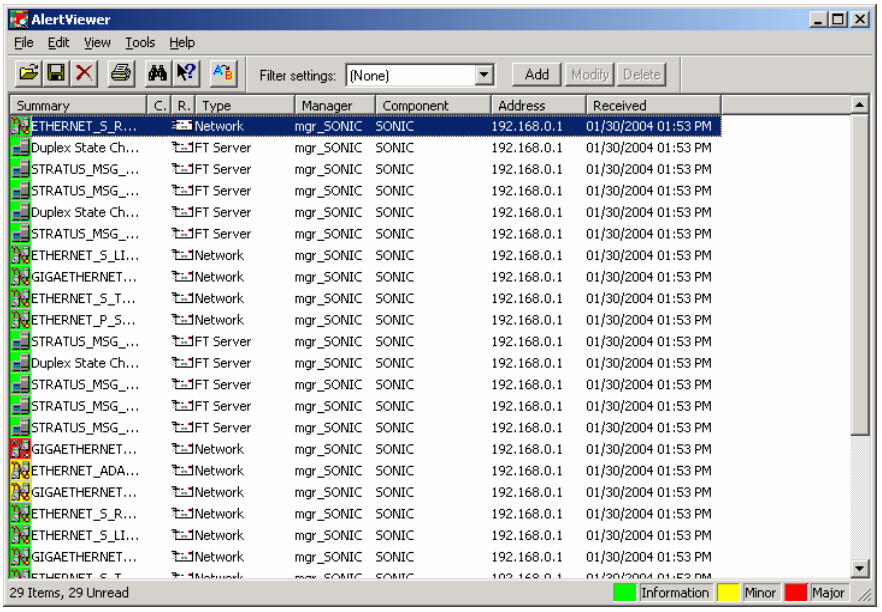
  The data viewer indicates the server source configuration information in the Explorer format. In addition, it changes the status color of the failed server component. This enables you to identify the failed portion.



- Alert Viewer

  The Alert Viewer manages fault reports sent from servers together. A fault occurred in a server is immediately reported to the Alert Viewer.

  The Administrator can recognize all faults on the network instantly.



NEC ESMPRO Agent

NEC ESMPRO Agent is a utility which acts as an agent (proxy) between NEC Express5800/ft series and NEC ESMPRO Manager (management PC). For details on the operating environment, the setting required before the setup, and the installation procedure, see the separate volume “User’s Guide (Setup)”.

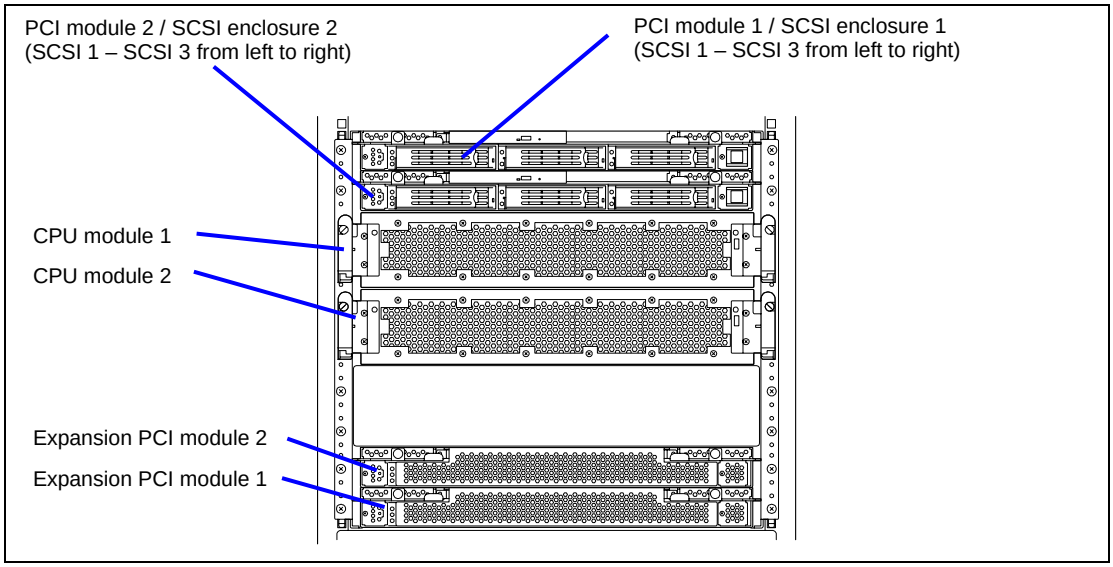
Device ID in Alert Report

Some NEC Express5800/ft series reports use unique device IDs which correspond to the devices listed in the table below as the device identification information.

Device name	Device ID
CPU module 1	0
DIMM1 on CPU module 1	0/0
DIMM2 on CPU module 1	0/1
DIMM3 on CPU module 1	0/2
DIMM4 on CPU module 1	0/3
DIMM5 on CPU module 1	0/4
DIMM6 on CPU module 1	0/5
DIMM7 on CPU module 1	0/6
DIMM8 on CPU module 1	0/7
DIMM9 on CPU module 1	0/8
DIMM10 on CPU module 1	0/9
DIMM11 on CPU module 1	0/10
DIMM12 on CPU module 1	0/11
CPU1 on CPU module 1	0/20
CPU2 on CPU module 1	0/21
CPU3 on CPU module 1	0/22
CPU4 on CPU module 1	0/23
Power supply unit on CPU module 1	0/100
CPU module 2	1
DIMM1 on CPU module 2	1/0
DIMM2 on CPU module 2	1/1
DIMM3 on CPU module 2	1/2
DIMM4 on CPU module 2	1/3
DIMM5 on CPU module 2	1/4
DIMM6 on CPU module 2	1/5
DIMM7 on CPU module 2	1/6
DIMM8 on CPU module 2	1/7
DIMM9 on CPU module 2	1/8
DIMM10 on CPU module 2	1/9
DIMM11 on CPU module 2	1/10
DIMM12 on CPU module 2	1/11
CPU1 on CPU module 2	1/20
CPU2 on CPU module 2	1/21
CPU3 on CPU module 2	1/22
CPU4 on CPU module 2	1/23
Power supply unit on CPU module 2	1/100
PCI module 1	10
PCI slot 1 on PCI module 1	10/0
PCI slot 2 on PCI module 1	10/1
PCI slot 3 on PCI module 1	10/2
SCSI adapter 1 on PCI module 1	10/5
SCSI bus 1 of SCSI adapter 1 on PCI module 1	10/5/0
SCSI bus 2 of SCSI adapter 1 on PCI module 1	10/5/1
Ethernet Board 1 on PCI module 1 (1000BASE)	10/3
Ethernet Board 2 on PCI module 1 (100BASE)	10/6
Power supply unit on PCI module 1	10/100

Device name	Device ID
PCI module 2	11
PCI slot 1 on PCI module 2	11/0
PCI slot 2 on PCI module 2	11/1
PCI slot 3 on PCI module 2	11/2
SCSI adapter 1 on PCI module 2	11/5
SCSI bus 1 of SCSI adapter 1 on PCI module 2	11/5/0
SCSI bus 2 of SCSI adapter 1 on PCI module 2	11/5/1
Ethernet Board 1 on PCI module 2 (1000BASE)	11/3
Ethernet Board 2 on PCI module 2 (100BASE)	11/6
Power supply unit on PCI module 2	11/100
Expansion PCI module 1	12
PCI slot 1 on expansion PCI module 1	12/0
PCI slot 2 on expansion PCI module 1	12/1
PCI slot 3 on expansion PCI module 1	12/2
PCI slot 4 on expansion PCI module 1	12/3
SCSI enclosure 1	10/40
SCSI slot 1 on SCSI enclosure 1	10/40/1
SCSI slot 2 on SCSI enclosure 1	10/40/2
SCSI slot 3 on SCSI enclosure 1	10/40/3
Electronics 1 on SCSI enclosure 1	10/40/120
Power supply unit on SCSI enclosure 1	10/40/100
Expansion PCI module 2	13
PCI slot 1 on expansion PCI module 2	13/0
PCI slot 2 on expansion PCI module 2	13/1
PCI slot 3 on expansion PCI module 2	13/2
PCI slot 4 on expansion PCI module 2	13/3
SCSI enclosure 2	11/40
SCSI slot 1 on SCSI enclosure 2	11/40/1
SCSI slot 2 on SCSI enclosure 2	11/40/2
SCSI slot 3 on SCSI enclosure 2	11/40/3
Electronics 1 on SCSI enclosure 2	11/40/120
Power supply unit on SCSI enclosure 2	11/40/100

The figure below shows the actual locations of the device names displayed on the NEC ESMPRO screen.



Supplement

Note the followings when using NEC ESMPRO Agent.

Application log registered when system starting

- Source: About the event of Perflib
  When system is starting, Perflib log may be registered to the application log.

  The detailed information about an event log is described on Microsoft Product Support Services. Please check the contents.

  – [INFO] Events for Performance Monitor Extensions
  http://support.microsoft.com/default.aspx?scid=kb;en-us;226494

  – Application Log Events Generated When You Start Performance Counter Query
  http://support.microsoft.com/default.aspx?scid=kb;en-us;296187

  – Event ID 2003 Warning Message Logged When Loading Performance Counters
  http://support.microsoft.com/default.aspx?scid=kb;en-us;267831

  Visit the Microsoft Help and Support on regular basis where you can find other information than the above at http://support.microsoft.com/default.aspx?LN=en-us.

Maintenance-related Functions

When you want to use maintenance-related functions of the NEC Express5800/ft series, contact your maintenance personnel.

CPU Installation Location

If you select [ESMPRO] – [Hardware] – [CPU] in standard configuration with two CPUs, the installation location of CPU is displayed incorrectly.

Care must be taken when referring CPU information because it seems to be installed on CPU socket 0 and CPU socket 1 on the display though CPUs are actually installed on CPU socket 0 and CPU socket 3.

In four CPU configuration, the installation location will be displayed correctly.

CPU Information

If you select [CPU Module] – [CPU] in the FTServer tree of the data viewer, unknown or incorrect information appears in some information items.

The CPU information can be viewed by selecting [System] – [CPU] in the [ESMPRO] tree.

Status during CPU Module Diagnosis

While diagnosing a stopped CPU module, the CPU is no longer in the duplex mode and the CPU and the memory cannot be used. However, the status of [CPU] and [DIMM] displayed under [CPU module] in the FTServer tree on a Data Viewer becomes “Online” and the status color becomes green.

Change of Installation States of CPU and PCI Modules

If you dynamically change the configuration of the CPU or PCI module in the relevant system during review of the server information by using the data viewer, the message prompting you to reconstruct the tree of the data viewer will appear. If you click the [Yes] button, the tree is reconstructed in the data viewer to reflect the change of the system configuration on the data viewer. Clicking the [No] button does not cause the tree to be reconstructed in the data viewer. If so, the information in the data viewer may be different from the current system information because the change of the system configuration is not reflected on the data viewer.

SCSI Slot Information

When the PCI module is detached and you select [SCSI Slot] – [General], the displayed "Hardware LED" information may not be correct.

To check the status of SCSI slots, see the string information in the "Status" column.

Impact When Module Status Changes

PCI modules, SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. For example, when the "Status" item of a module changes to "fault," it may be caused by another module’s error. Therefore, you need to check the status of the other modules based on alert information.

Status Color after Mounting a Hard Disk Drive

When creating a new mirror, the status of the hard disk and its upper component, SCSI enclosure, will continue to change frequently after you mount a hard disk until the mirror is completed. During this process, the status color may turn to abnormal, but when the mirror is created successfully, it will return normal.

Total Status of the PCI Module

When each module's status is simplex, the total status of the PCI module displayed on the Data Viewer is yellow (warning) and the status will be reflected to the server status. The ft control software 3.0 or later does not display the information on Ethernet or SCSI adapter on the tree of the Data Viewer. If an error occurs on an Ethernet or SCSI adapter, view the alert reports.

Hard Disk Drives Mirrored by the Rapid Disk Resync (RDR) Function

The Data Viewer's [Mirror Disk] tree of [FTServer] shows a pair of hard disk drives constructing mirroring as one mirror. Therefore the status of a volume (such as span volume and striping volume) over multiple hard disk drives created by the RDR function may not be displayed correctly. Use the RDR Utility for checking the state of mirrored hard disk drives created by the RDR function.

Fault Time of SCSI Slots

In the NEC Express5800/ft series with ft control software 3.0, "Time of last fault" in [Maintenance] under [SCSI slot] on a Data Viewer is not supported. Therefore the time will not be displayed correctly.

The Information on the Hard Disk Drive in the Disk Expansion Unit is not Displayed Correctly.

When the Disk Expansion Unit is mounted, the information on the hard disk drive in the Disk Expansion Unit may not be displayed on the [SCSI Enclosure] – [SCSI Slot] information on a Data Viewer. In such case, reboot the system.

LAN Monitoring Report

The LAN monitoring function defines the line status depending on the number of transmission packets and the number of packet errors within a certain period. Thus, the LAN monitoring function may report a line fault or high line load only in a temporary high line impedance state. If a normal state recovery is reported immediately, temporal high line impedance may have occurred thus there is not any problem.

LAN Monitoring Threshold

Because the NEC Express5800/ft series detects hardware faults on the network in the driver level, NEC ESMPRO Agent does not monitor line faults. Thus, the value set for "Line fault occurrence rate" of a [LAN] tab of [NEC ESMPRO Agent properties] in the control panel is not used.

Community Authority

Depending on your OS type or its version, settings for community, SNMP service's security function, are not made, or default settings of authority are different.

To enable the remote shutdown and threshold change functions via NEC ESMPRO Manager, make settings of community and set its authority to "READ CREATE" or "READ WRITE."

Monitoring in Sleep State

NEC ESMPRO Manager cannot monitor the NEC ESMPRO Agent machine in the sleep state (system standby or system halt state).

While NEC ESMPRO Manager monitors server shutdown, the relevant NEC ESMPRO Agent machine may be entered into the sleep state. If so, the report "server access disabled" is issued and the status color of the server icon becomes gray. This cannot indicate whether the NEC ESMPRO Agent machine is shut down or entered into the sleep state. Keep these in mind when operating the system where systems to be monitored may enter the sleep state.

Monitoring with NEC ESMPRO Manager Ver.4.0 or Earlier

Some items cannot be monitored with NEC ESMPRO Manager of version 4.0 or earlier.

NEC ESMPRO Manager Ver.4.1 is registered in NEC EXPRESSBUILDER CD-ROM. Use the NEC ESMPRO Manager Ver.4.1.

Hardware Monitoring by ESMPRO

In NEC Express5800/340Hb-R, an alert report is not issued if an error on temperature/fan/power supply/voltage is detected in CPU module and PCI module (including expansion PCI module).

Moreover, the trees [Temperature], [Fan], [Voltage], and [Power Supply] are not displayed on [System Environment] of Data Viewer of NEC ESMPRO Manager.

Change of SNMP Community

If the security setting of the SNMP Service of a system, where the NEC ESMPRO Agent is installed, is changed from the default "public" to a community name, change the community settings of the NEC ESMPRO Agent, too.

1. Double-click the [NEC ESMPRO Agent] icon in [Control Panel].
2. Select a desired community name from the [SNMP Community] list box in [SNMP Setting] of the [General] sheet.

   The community names to receive SNMP packets from are listed in the [SNMP Community] list box.
3. Click [OK] to terminate the operation.

Printer Information's Available Time:

When you add a new printer, install its driver and make its settings, if you do not make settings for the available time from Add Printer Wizard, the printer's available time (From and To) in [Printers and Faxes] are [00:00], on the other hand, Manager's time are [9:00]. To display them properly, make the settings of printer from [Printers and Faxes]. The procedures are as follows;

1. Start [Printers and Faxes], and open the printer properties you want to make settings for. (Select the [Printers and Faxes], right-click and select [Properties].)
2. Select the [Advanced] tab.
3. Enter values in the available time (From and To), and click [OK] in the [Advanced] and [Properties] dialog boxes.

Now, you can see the correct information from Manager, too.

Disk Maintenance while NEC ESMPRO Agent is Running

The following works to disks (hard disk drive or magneto optical) are not allowed while NEC ESMPRO Agent is running;

To format or delete a partition by Disk Administrator or by other means.

To request programmatically to remove media from removable disks such as MO, Zip and PD.

1. Select the [Start] – [Settings] – [Control Panel]
2. Open the [Service]
3. Select a service named "ESMCommonService", and click the [Stop].
4. Confirm that "ESMCommonService" stopped, and close the [Service].
5. Do the disk-related works.
6. Open the [Service] again, select "ESMCommonService" and click the [Start].
7. Confirm that "ESMCommonService" is active and close the [Service] and [Control Panel].

Connection with Hard Disk Drive

The preventive hard disk drive maintenance function may not work properly when a hard disk drive which was used in a system where NEC ESMPRO Agent is installed is connected to other systems. Make sure not to connect such hard disk drives.

Change Settings of File System Monitoring Function

New settings in thresholds of monitoring interval and free space monitoring are not reflected immediately after they are changed. They are reflected at the next monitoring interval of monitoring service.

CPU Load Ratio of SNMP Service (snmp.exe)

While monitoring the server from NEC ESMPRO Manager, the CPU load ratio of SNMP Service on the NEC ESMPRO Agent side may increase at every monitoring interval (default: 1 minute).

NEC ESMPRO Manager and NEC ESMPRO Agent exchange information through SNMP Service. If the server status monitoring by NEC ESMPRO Manager is on (default: ON), NEC ESMPRO Manager regularly issues a request to NEC ESMPRO Agent to get the current status of the server. In response, NEC ESMPRO Agent checks the status of the server. As a result, the CPU load ratio of SNMP Service increases temporarily.

If you have trouble of terminating a movie player application, turn off the server status monitoring by NEC ESMPRO Manager or extend the monitoring interval.

Hang of SNMP Service

SNMP Service has a module called "SNMP Extended Agent." This module may be registered when you install some software that uses SNMP Service.

If you start SNMP Service, SNMP Extended Agent is also loaded at the initialization. However, if the initialization is not completed within a specified period, SNMP Service will hang.

It may take time to complete the initialization due to temporary high load on the system. In this case, wait for the system load become low enough before restarting SNMP Service.

CPU Information

In [CPU Information] of Data Viewer’s system tree, the external clock is listed as "Unknown."

When [FTServer] Tree Appears on Date Viewer in an Incorrect Manner

If you open a Data Viewer immediately after the system starts up, the tree or the state of a Data Viewer may not be displayed correctly due to high load of the system. In about 20 minutes after the system startup, when a pop-up message (below) which prompts you to reconstruct a Data Viewer appears, click [OK]. The Data Viewer will be reconstructed and the tree and the status will be displayed correctly.

> Data Viewer
>
> The system configuration of the host may have been changed. Do you wish to reconstruct the tree?

Floppy Disk Drive Name

After unplugging and plugging the PCI module of the primary side, the floppy disk drive name of [I/O Device] on Data Viewer may be different from the name that is recognized by the OS.

(Example: drive name on Data Viewer: "A"
drive name recognized by the OS: "B")

Check the floppy disk drive name on Explorer.

Floppy Disk Drive Information

If you add or delete floppy disk drive connected with USB while the system is running, the drive information under the [I/O Device] in the data viewer will be updated at the next system startup.

Displayed BIOS Data Is Incorrect

BIOS additional data may not be displayed properly in [BIOS Information] of a CPU Module of the ft server utility or in [Ft Server] – [CPU Module] – [Individual CPU Module] – [General] – [BIOS Information] of Data Viewer.

In this case, see the data in [ESMMIB] – [BIOS] of Data Viewer.

Ethernet Adapters You Do Not Use

If an Ethernet adapter is not used (not connected to cable), set it to "Disable" in [Network Connections] from Control Panel. If an Ethernet adapter you are about to disable has dual LAN settings (AFT function), remove the dual LAN settings before disable it.

NEC ESMPRO Manager

To monitor and manage a computer, on which NEC ESMPRO Agent is installed, with a management PC online, use NEC ESMPRO Manager that is bundled with the product.

For detailed procedures of installation and setting, see online documents or NEC ESMPRO Online Help.

TIPS:

- Online documents provide cautions and information for using NEC ESMPRO Manager. See *NEC ESMPRO Manager User's Guide* in the NEC EXPRESSBUILDER CD-ROM.
- The sample screen shown in this subsection may differ from that of your server software, however, it offers the same function.

Monitoring by Use of Data Viewer

To monitor the state of the NEC Express5800/ft series on a management computer with installation of NEC ESMPRO Manager, the data viewer is used. If you click each of the modules and items to be checked sequentially on the tree view in the Windows Explorer format, the data viewer indicates their states on the right side of the screen.

You can manage the status on a Web browser using Web component functions of NEC ESMPRO Manager. For details, see Help on Web Component.

This section describes the tree structure and displayed screens in the data viewer.

To make the data viewer indicate the state of each module and those of the components on it, select the server to be monitored from NEC ESMPRO Manager to start the data viewer (in the following description, the start procedure of the data viewer is omitted).

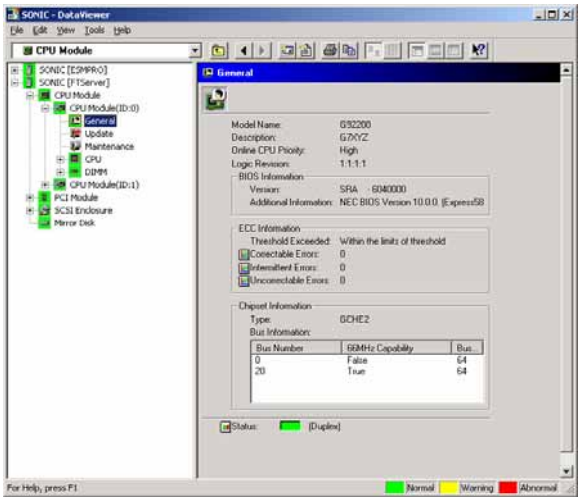
Monitoring CPU Module

To monitor the CPU modules and the components on the CPU module, see the [CPU Module] tree. To see the information on the [CPU Module] tree, select the target CPU module from [CPU Module] in the [FTServer] tree.

You can see the following information on the modules and the components on the CPU modules in the [CPU Module] tree.

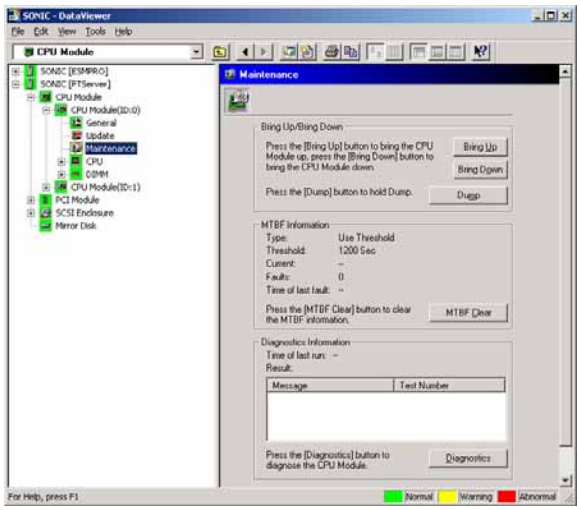
- General

  Allows the configuration and other information on the CPU modules to be viewed.



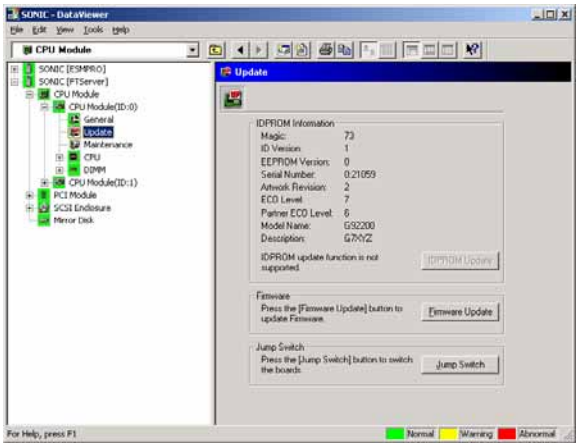
- Maintenance

  Allows the start/stop, MTBF information clear, dump acquisition, and diagnosis of the CPU modules to be provided. See "Maintenance of NEC Express5800/ft series" described later for the start/stop and MTBF information clear of the CPU modules.



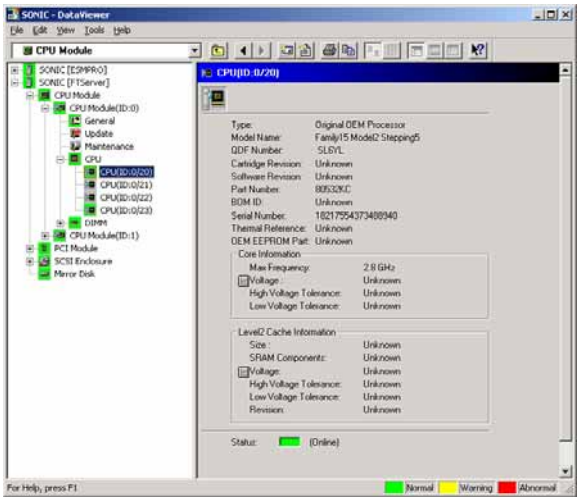
- Update

  Allows the device identification information of the CPU modules to be viewed and BIOS of the CPU modules to be updated. See "Maintenance of NEC Express5800/ft series" described later for the update of BIOS of the CPU modules. The detailed device identification information can be checked by selecting [ESMPRO] tree→[Hardware] tree→[Field Replaceable Unit] tree.



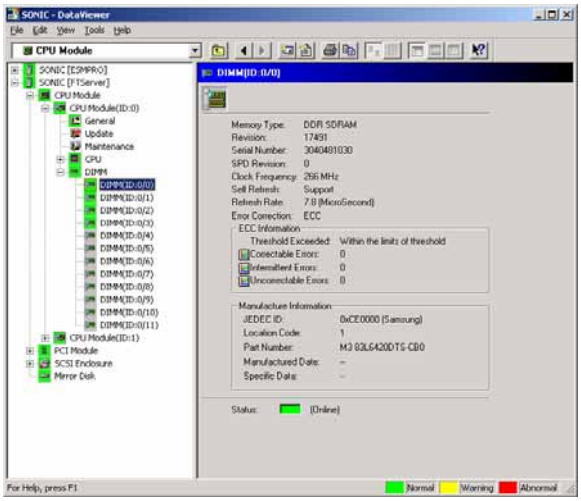
- CPU

  Allows the information of the CPU on the CPU modules to be viewed.



■ DIMM

Allows the information of DIMM on the CPU modules to be viewed.



Monitoring PCI Module

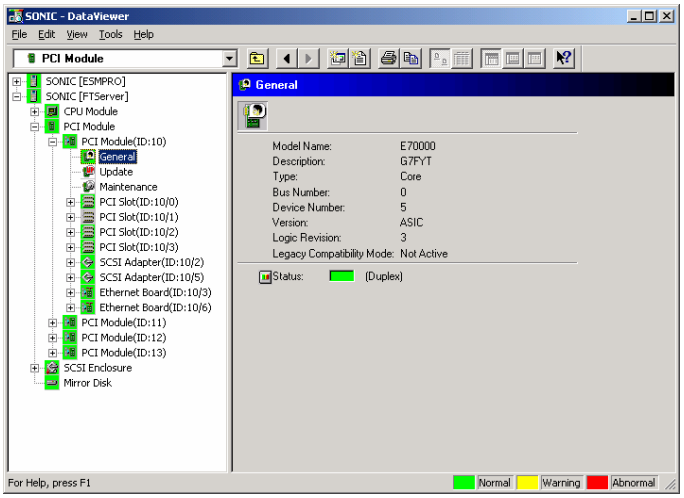
To monitor the PCI modules (including expansion PCI modules) and the components on the PCI modules, refer to the [PCI Module] tree. To see the information on the [PCI Module] tree, select the target PCI module from [PCI Module] in the [FTServer] tree.

You can see the following information on the PCI modules and the components on the PCI modules of the [PCI Module] tree.

(This section describes the general information screens of the PCI modules. The components on the PCI modules are described later.)

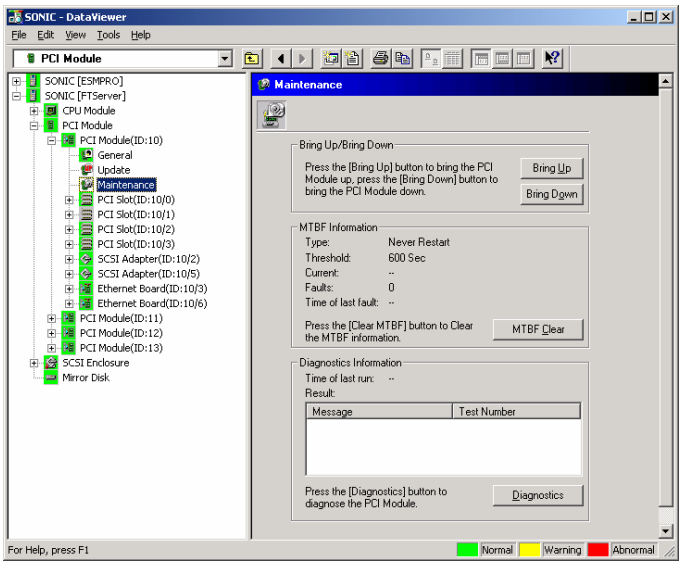
- General

  Allows the configuration and other information of the PCI modules to be viewed.



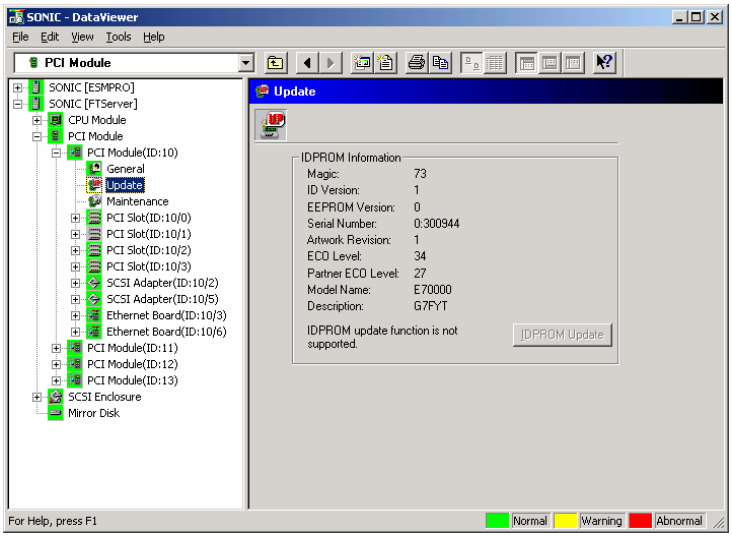
■ Maintenance

Allows the start/stop, MTBF information clear, and diagnosis of the PCI modules to be provided. See "Maintenance of NEC Express5800/ft series" described later for the start/stop and MTBF information clear of the CPU modules.



■ Update

Allows the device identification information of the PCI modules to be viewed. The detailed device identification information can be checked by selecting [ESMPRO] tree→[Hardware] tree→[Field Replaceable Unit] tree.



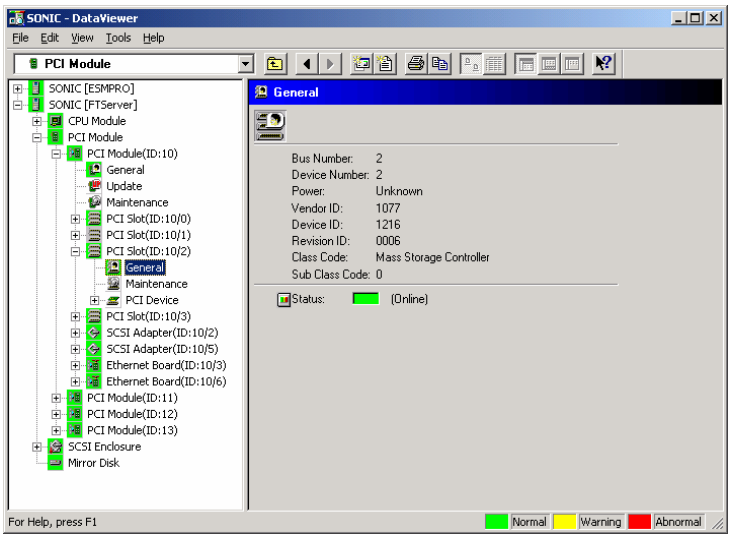
Monitoring PCI Slots and Devices on PCI Module

To monitor the PCI slots and devices on the PCI modules (including expansion PCI modules), see the [PCI slot] tree. To see the information on the [PCI slot] tree, select [PCI Module]→[PCI module (containing PCI slot to be seen)]→[PCI slot] of the [FTServer] tree.

You can see the following information on the PCI slot and the devices on the PCI slot in the [PCI slot] tree.

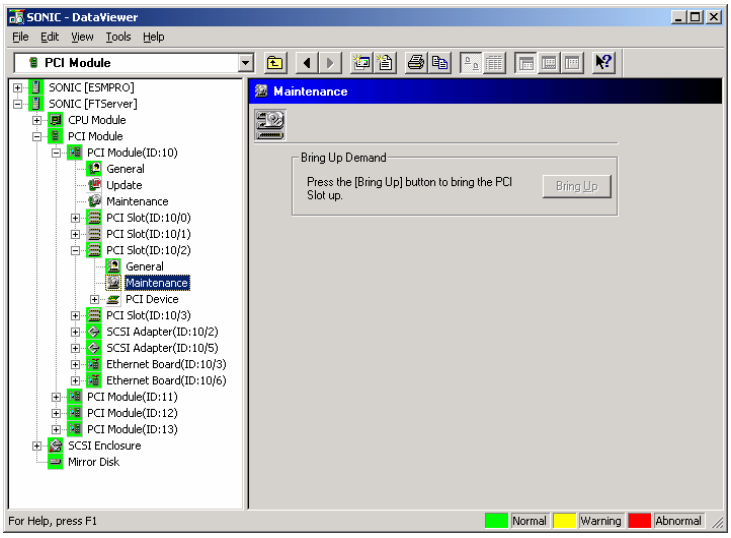
- General

  Allows the PCI slot configuration information to be viewed.



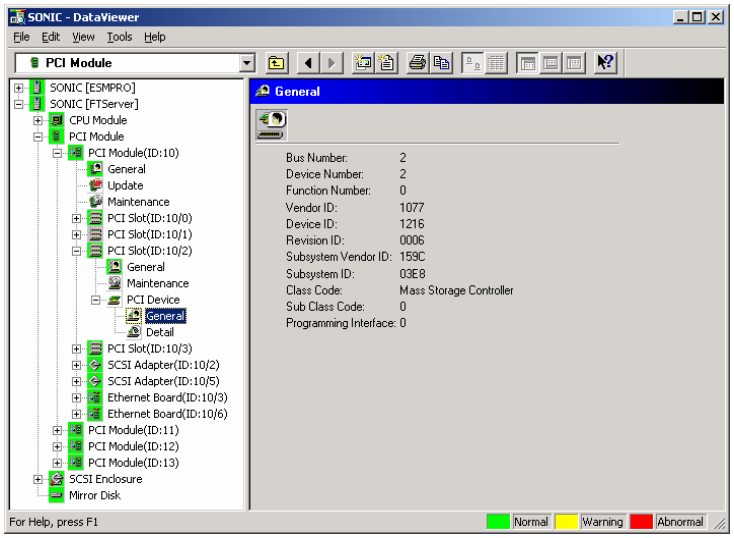
- Maintenance

  Allows a device on the PCI slot to be started. This function is not supported in the current version.



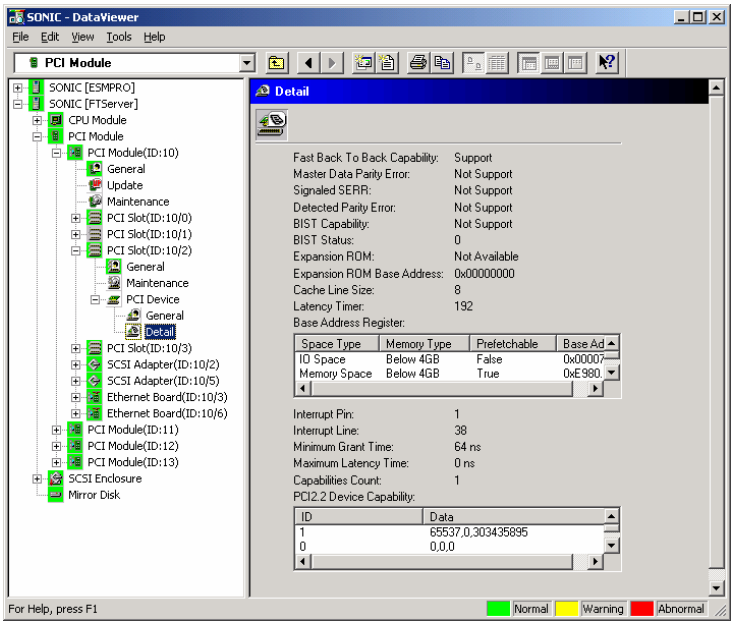
■ PCI Device – General

Allows the information of devices on the PCI slot to be viewed.



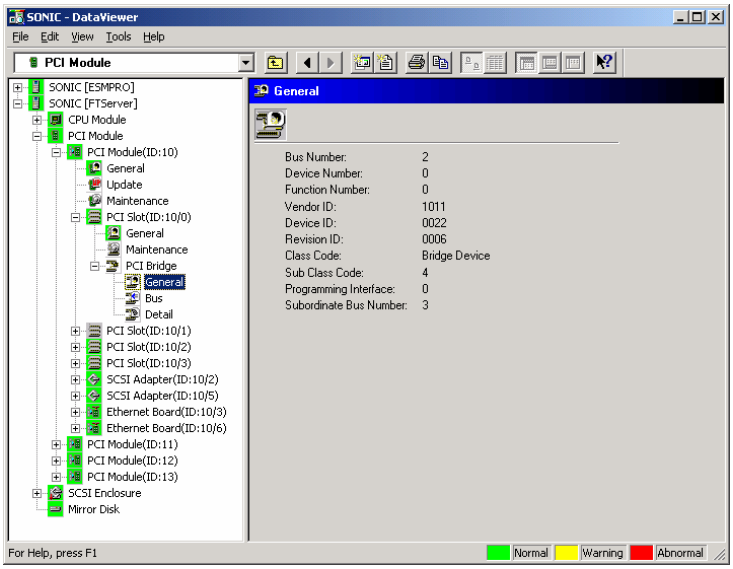
■ PCI Device – Detail

Allows the detailed information of a device on the PCI slot to be viewed.



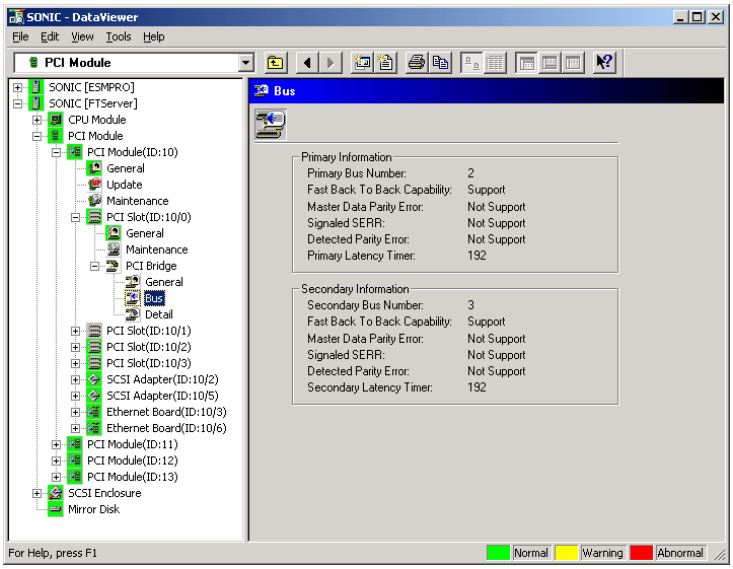
■ PCI Bridge – General

Allows the information of bridges on the PCI bus to be viewed



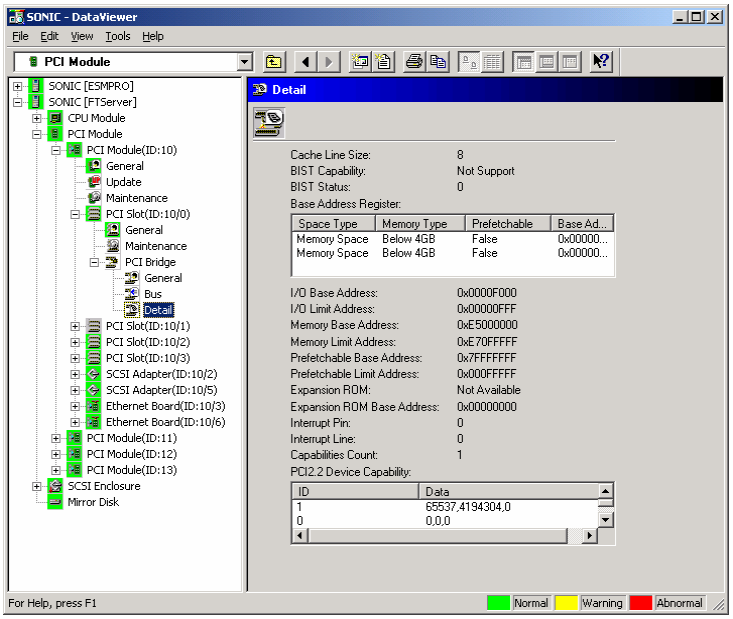
■ PCI Bridge – Bus

Allows the bus information of a bridge on the PCI bus to be viewed.



■ PCI Bridge – Detail

Allows the detailed information of a bridge on the PCI bus to be viewed.



Monitoring SCSI Enclosure

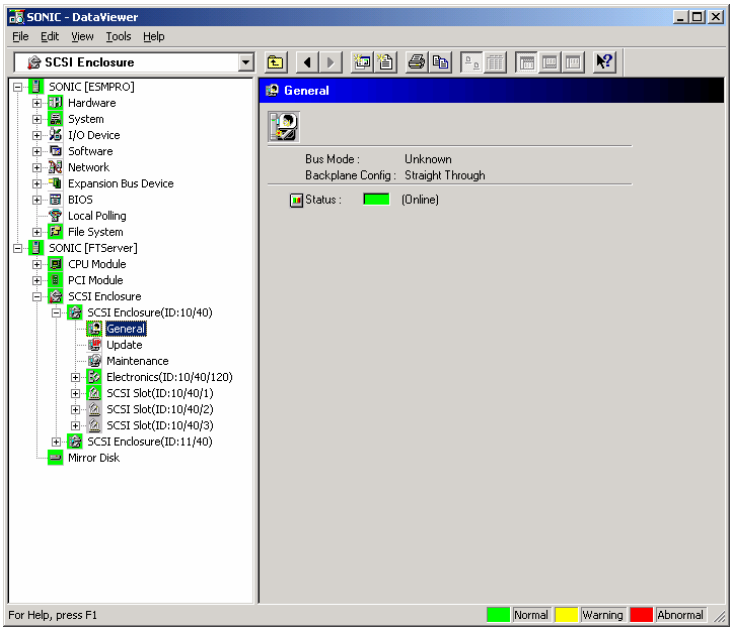
To monitor the SCSI enclosure, see the [SCSI enclosure] tree. To see the information on the [SCSI enclosure] tree, select [SCSI enclosure] of the [FTServer] tree.

You can see the following information of the SCSI enclosure from the [SCSI enclosure] tree.

- General

  Allows the configuration and other information of the SCSI enclosure to be viewed.

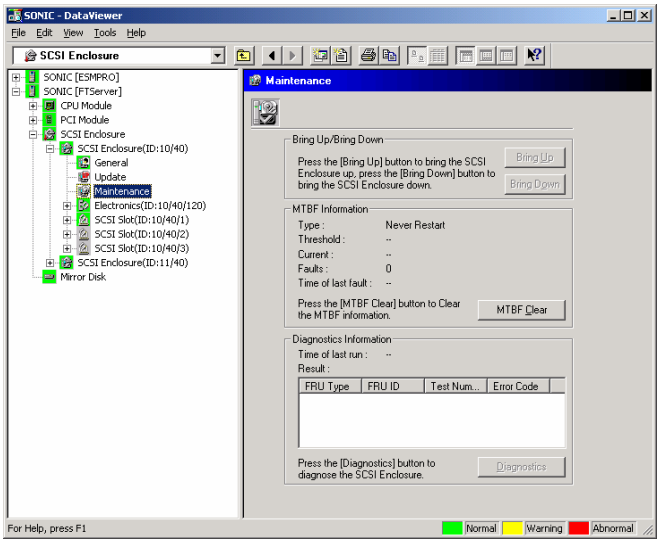
> **IMPORTANT:** You need to be aware that PCI modules, SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. For details, see "Impact When Module Status Changes" described above.



■ Maintenance

Allows the MTBF information of the SCSI adapter to be viewed or cleared.

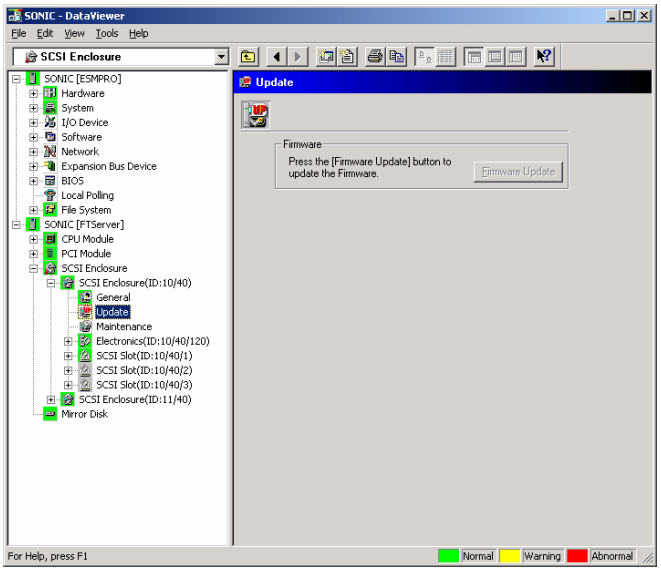
See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information on the SCSI enclosure.



■ Update

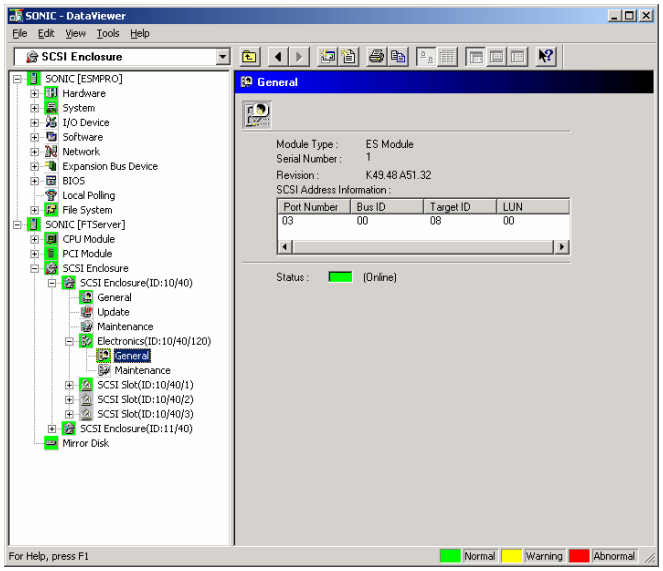
Allows the firmware of the SCSI enclosure to be updated.

However, this function is not supported in the current version.



- Electronics – General

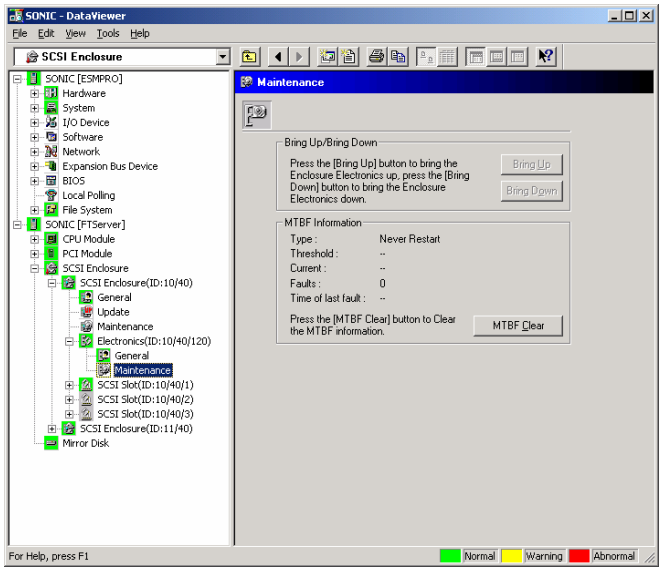
  Allows the configuration and other information of the SCSI enclosure electronics to be viewed.



- Electronics – Maintenance

  Allows the MTBF information of the SCSI enclosure electronics to be viewed or cleared.

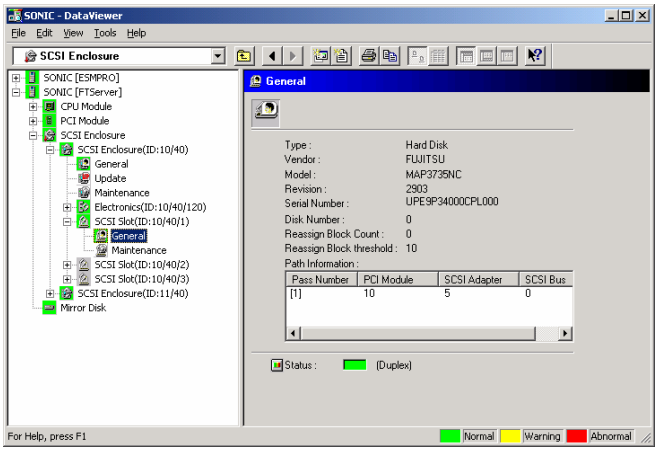
  See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information on the SCSI electronics enclosure.



■ SCSI Slot – General

Allows the configuration and other information of the SCSI slot to be viewed.

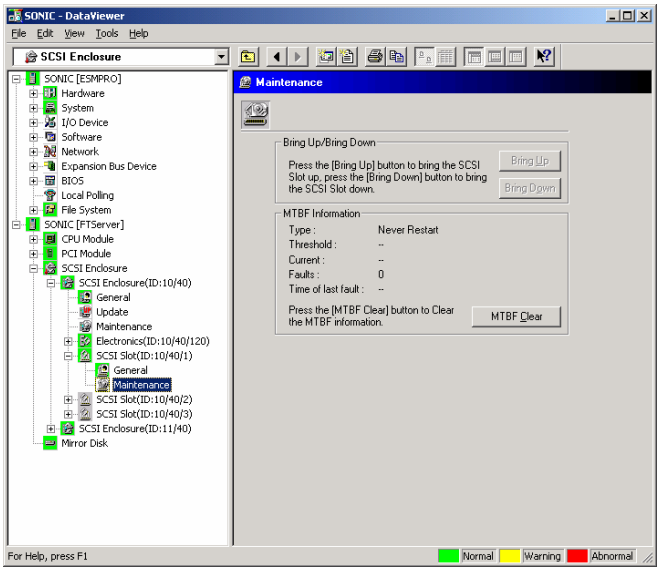
IMPORTANT: You need to be aware of the status of hard disk during the mirror creation. For details, see "Status Color Changes after Hard Disk Drive is Mounted" described earlier in this chapter.



■ SCSI Slot – Maintenance

Allows the MTBF information of the SCSI slot to be viewed or cleared.

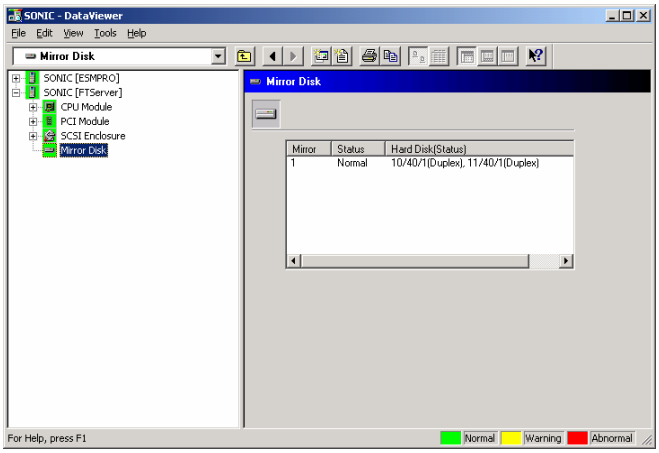
See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information on the SCSI slot.



Monitoring Mirror Disk

To monitor the mirror disk components, see the [Mirror Disk] tree. To view information on [Mirror Disk] tree, select [Mirror Disk] under [FTServer] tree.

You can see the redundancy status of the mirrors and the device IDs of the SCSI slots into which these hard disk components are connected.



[Mirror Disk]

Monitoring Hard Disk

To monitor the hard disks and detect disk failures at an early stage, use the NEC ESMPRO Manager and Agent. You can see configurations and information of hard disk in the Data Viewer.

Monitoring Operations

This section describes how to maintain hard disks.

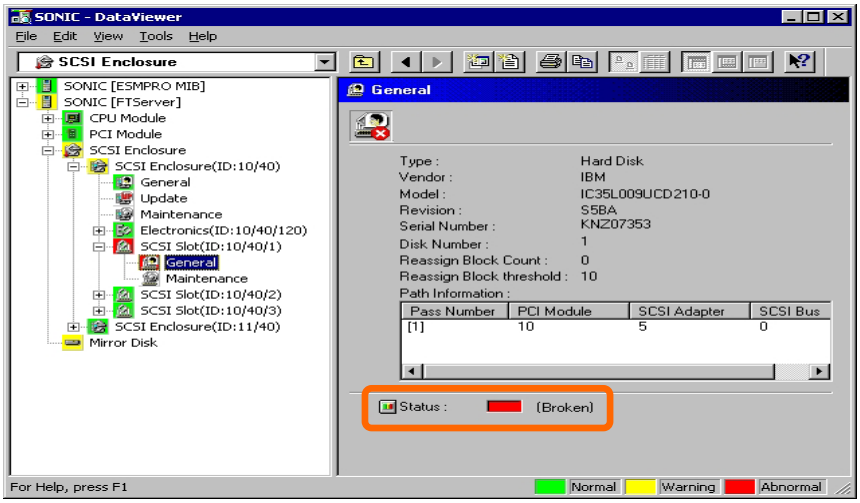
1. Confirmation of hard disk failure

If NEC ESMPRO Agent detects some problem with a hard disk, it will report an alert of the problem to NEC ESMPRO Manager. Please check the alert viewer in the manager regularly.

Ex. If a hard disk in SCSI Slot (10/40/1) is broken, agent reports the following alert.

```
Device 10/40/1 is now BROKEN.
```

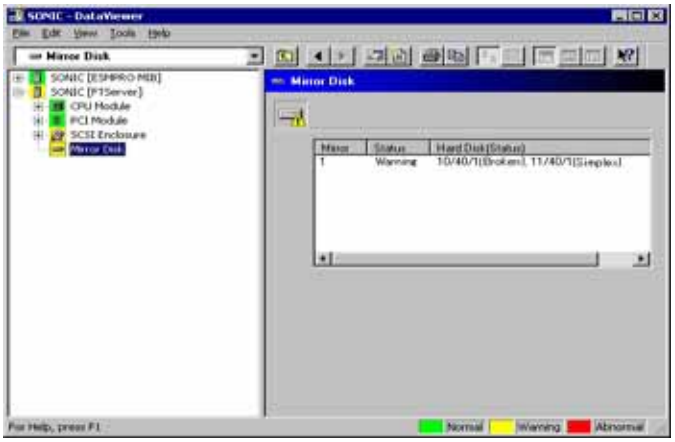
And manager displays the problem information of the hard disk in the [SCSI enclosure] → [SCSI Slot] → [General] of the data viewer.



[SCSI Slot] → [General]

2. Confirmation of mirror status

To check the redundancy status of the failed mirror disk, open [Mirror Disk] screen under [FTServer]. On this screen, you can check the redundancy status of the mirror and the status of the mirrored hard disks.



[Mirror Disk]

IMPORTANT: The mirroring redundancy status will change depending on the status of the two hard disks that make up a mirror as follows:

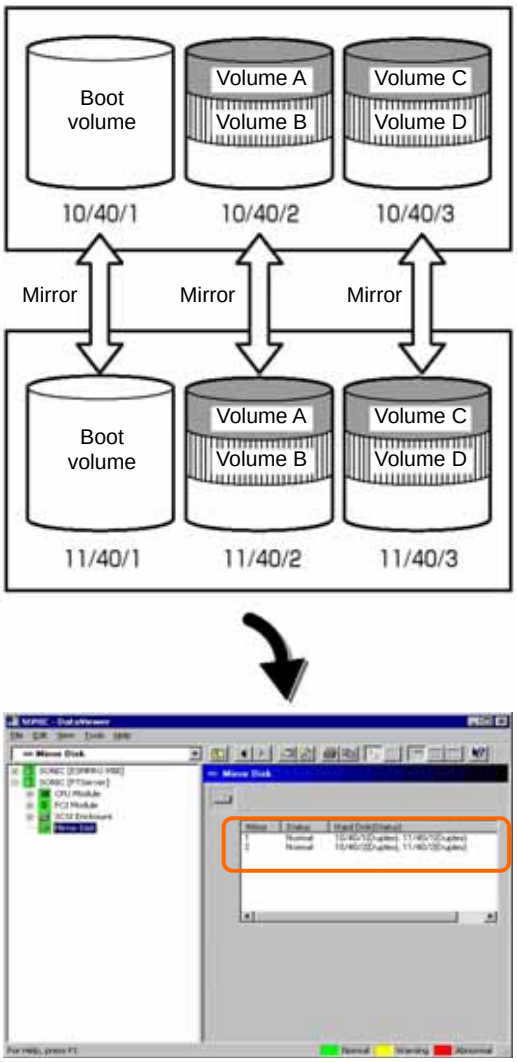
Status of hard disk drive 1	Status of hard disk drive 2	Status of mirror volume
Duplex	Duplex	Normal
	Simplex	–
	Others	Warning
Simplex	Duplex	–
	Simplex	Normal
	Others	Warning
Others	Duplex	Warning
	Simplex	Warning
	Others	–

"–": No status is shown.

TIPS: Unless the hard disks make up a mirror, the Mirror Disk screen does not show any information.

IMPORTANT: The Mirror Disk screen shows a pair of hard disks constructing mirroring as a mirror. Note that when multiple volumes are created in these hard disks, the information on the volumes will not be displayed.

Ex. A few volumes are created within a single disk:



The screen shows information on a pair of hard disks that make up a mirror. It does not show information based on volumes (ex. Volume A, Volume B).

3. Recovery from a hard disk failure

If a hard disk breaks, the broken disk must be replaced immediately. This section describes alert reports and status shown by the Data Viewer while disks are replaced to restore mirroring.

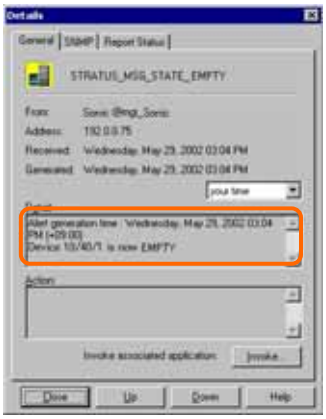
(1) Detecting problem of a hard disk

See [1. Confirm of hard disk failure] above.

(2) Removing the hard disk

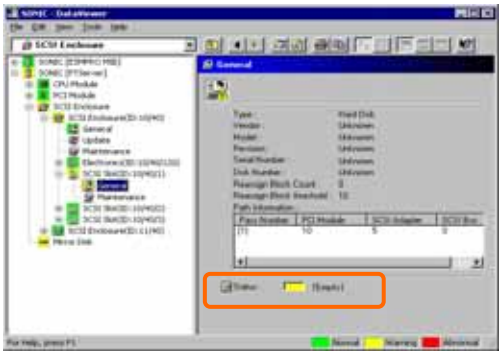
Disconnect the hard disk with the problem. At this time, NEC ESMPRO Agent reports the following alert to manager. And icons related to the hard disk with problem change the state of warning in the data viewer.

Since the hard disk has been removed, the status of the SCSI slot will be "EMPTY."



TIPS: You can identify the new hard disk by DevicePathID (ex. 10/40/1).

When one hard disk with problem was disconnected, SCSI slot changes the status to "Warning".

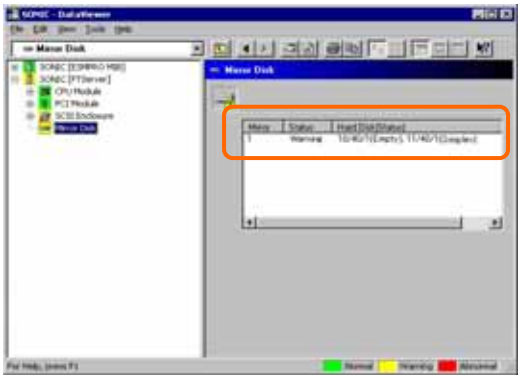


[SCSI Slot] → [General]

IMPORTANT: The status color of the SCSI slot differs depending on the connection of mirrored hard disks:

- If one of the mirrored disks was removed: Warning
- If both of the mirrored disks were removed: Gray

Also, at this time, the redundant status of mirrored disks is changed to "Warning".

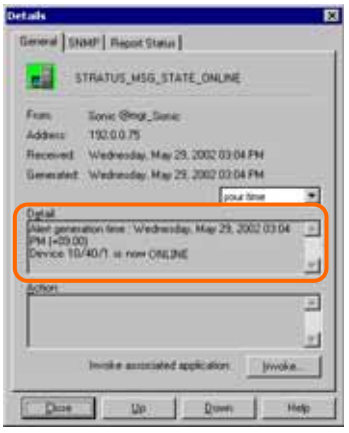


[Mirror Disk]

(3) Connect a new hard disk

Next, connect a new hard disk to the same SCSI Slot. At this time, NEC ESMPRO Agent reports the following alert to manager. And icons related to the hard disk are changed to the state of normal in the data viewer.

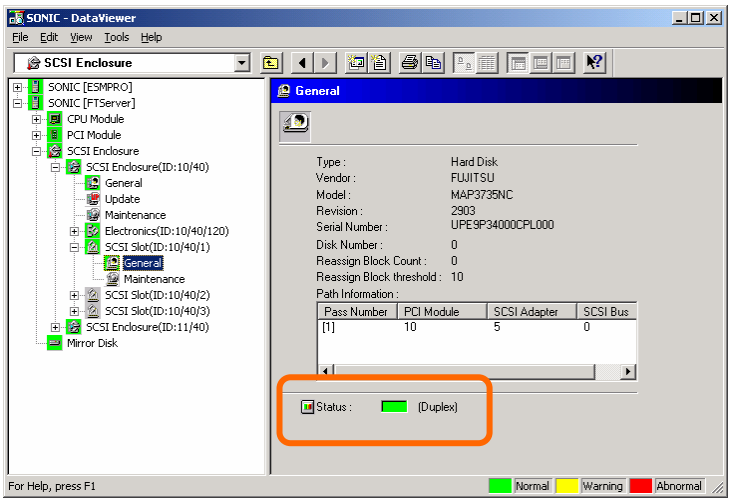
When the hard disk is connected, SCSI Slot changes the status to "ONLINE".



[Alert report]

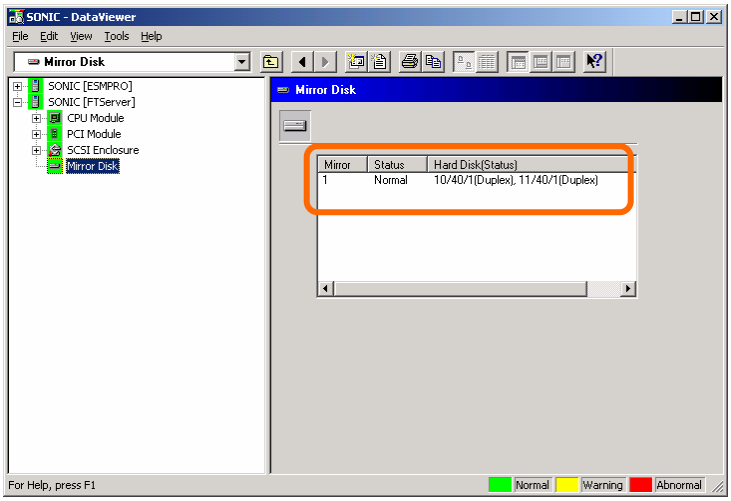
TIPS: You can identify the new hard disk by DevicePathID (ex. 10/40/1).

When the hard disk is connected, SCSI Slot changes the status to "Normal".



[SCSI Slot] → [General]

Also, at this time, the state of the mirrored disks changes to "Normal".



[Mirror Disk]

Maintenance of NEC Express5800/ft series

NEC Express5800/ft series maintenance can be done in two ways; one is to use NEC ESMPRO Manager for remote maintenance and the other is to use the NEC ESMPRO Agent ft server utility on the NEC Express5800/ft series for local maintenance.

TIPS: To start the NEC ESMPRO Agent ft server utility installed in the NEC Express5800/ft series, select the items as follows:

Start Menu→[Programs]→[NEC ESMPRO Agent]→[ft server utility]

The maintenance functions that can be executed from NEC ESMPRO include three types, those common to all components, those specific to particular components, and general system settings.

The maintenance functions common to all components are operated in the same way basically (the operation procedure and typical examples of screen images are described below).

The table below lists the maintenance functions common to all components.

Component	Start		Stop		MTBF clear		Diag-nosis		F/W update	
	R	L	R	L	R	L	R	L	R	L
CPU module	√	√	√	√	√	√	√	√	√	√
PCI module or expansion PCI module	√	√	√	√	√	√	√	√	–	–
PCI slot	–	–	–	–	–	–	–	–	–	–
Ethernet adapter	–	–	–	–	–	√	–	–	–	–
SCSI adapter	–	–	–	–	–	√	–	–	–	–
SCSI enclosure	–	–	–	–	√	√	–	–	–	–
SCSI electronics	–	–	–	–	√	√	–	–	–	–
SCSI slot	–	–	–	–	√	√	–	–	–	–

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

Note: In the ft server utility, the MTBF clear of SCSI adapter and Ethernet cannot be performed to onboard devices.

The table below shows the component-specific maintenance functions executable from NEC ESMPRO.

Component	Dump acquisition		Dump acquisition during system operation		Board switch	
	R	L	R	L	R	L
CPU module	–	√	√	√	√	√

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

Component	Bus reset		Change of primary SCSI bus	
	R	L	R	L
SCSI bus	–	√	–	–

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

The table below shows the support of the whole system setup functions.

Component	Quick dump		Auto firmware update		Auto module start	
	R	L	R	L	R	L
Whole system	–	√	–	√	–	√

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

The table below shows the support of the preventive disk maintenance (S.M.A.R.T.) setup function.

Component	Preventive disk maintenance (S.M.A.R.T.) setup	
	R	L
SCSI disk	–	–

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

Start and Stop of Components

To start or stop a component with NEC ESMPRO Manager, use the [Maintenance] tree of the component in the [FTServer] tree of the data viewer. Open the tree of the component to be started or stopped and select the [Maintenance] tree.

To start or stop a component with the ft server utility, use the utility screen of the component.

The table below shows the potential cases in which a component is to be started or stopped.

Compo-nent	Start		Stop	
	Remote	Local	Remote	Local
CPU Module	When the cause of down is reviewed and the system is restarted in module down state. Executable in any of the following module states (this can be viewed on manager screen): • Removed • Broken • Shot • Firmware Update Complete • Diagnostics Passed	When the cause of down is reviewed and the system is restarted in module down state. Executable in the following module state: • When the status LED 1 is red and the status LED 2 is off Only the status LED illuminates red when the module is in one of the following states: • Removed • Broken • Shot • Firmware Update Complete • Diagnostics Passed	When system is stopped forcibly due to replacement or malfunction of module. Executable in the following module state (this can be viewed on manager screen): • Duplex	When system is stopped forcibly due to replacement or malfunction of module. Executable in the following module state: • Only the green LED is on and in redundant configuration state The both green LEDs are on when the module is in the following state: • Duplex
PCI Module or expansion PCI module	Same as above	Same as above	Same as above	Same as above
SCSI Slot	–	–	–	–

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

IMPORTANT: PCI modules/expansion PCI modules, SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. You need to be aware of this, for example, when you replace a PCI module/expansion PCI module. For details, see "Impact When Module Status Changes" described earlier in this chapter.

Procedure in NEC ESMPRO Manager

Start

1. Select the target component in the [FTServer] tree.
2. Check the current state with the "Status" display on the target component screen.
3. Click the [Bring Up] button in the [Maintenance] screen for the target component.

   A certain time is required for the start.

   The start result can be confirmed by "State" on the target component screen. The result of the start operation is reported by the NEC Express5800/ft series as an alert.

Stop

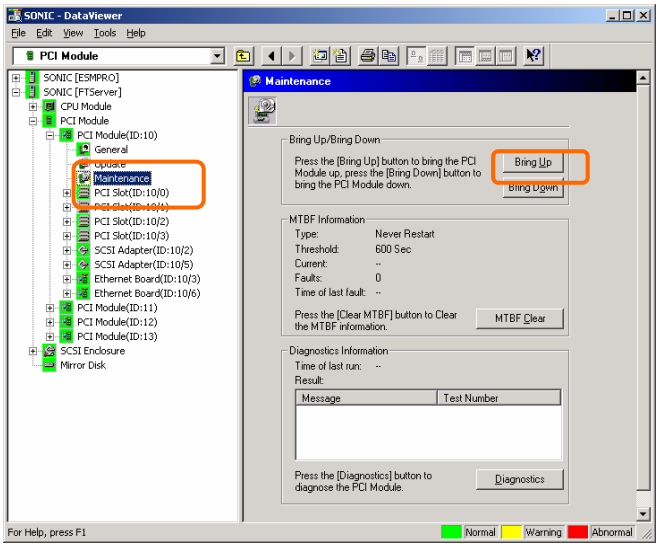
Perform the procedure below before replacing a component.

1. Select the target component in the [FTServer] tree.
2. Check the current state with the "State" display on the target component screen.
3. Click the [Bring Down] button in the [Maintenance] screen for the target component.

   A certain time is required for the stop.

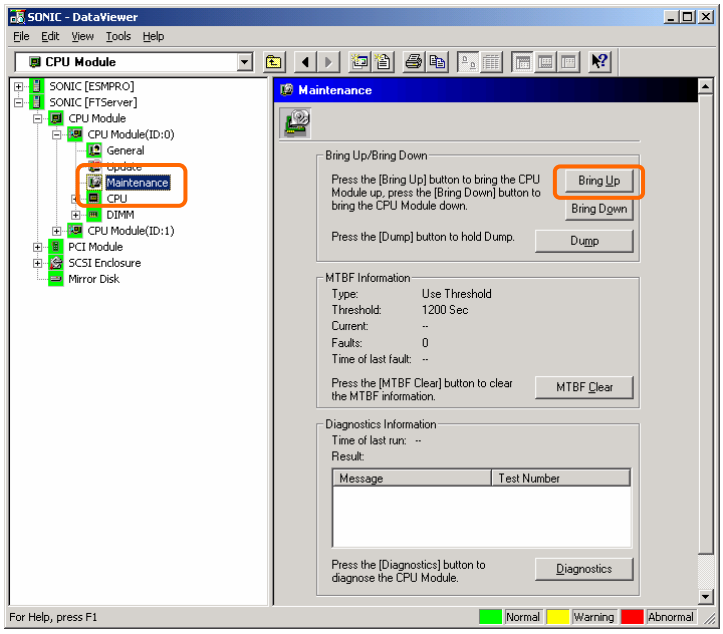
   The stop result can be confirmed by "State" on the target component screen. The result of the stop operation is reported by the NEC Express5800/ft series as an alert.

Sample screen of NEC ESMPRO Manager 1



[Maintenance] screen of PCI module/expansion PCI module
[PCI Module] – [PCI Module] - [Maintenance]

Sample screen of NEC ESMPRO Manager 2



[Maintenance] screen of CPU module
[CPU Module] – [CPU Module] - [Maintenance]

Procedure in the ft server utility

Start

1. Select the target component by using the ft server utility.
2. Check the current state of the target component with the LEDs.
3. Click the [Up] button of the target component.

   A certain time is required for the start.

   The start result can be confirmed by the LEDs on the target component. The result of the start operation is registered in the event log.

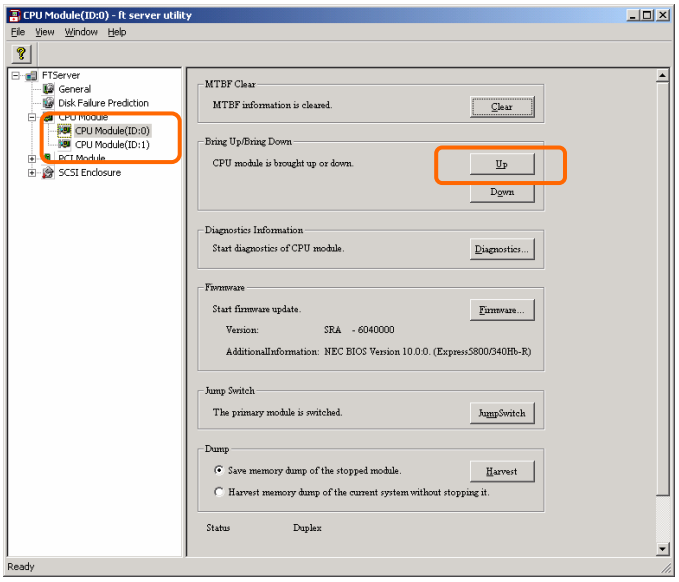
Stop

1. Stop before replacing components.
2. Select the target component by using the ft server utility.
3. Check the current state of the target component with the LEDs.
4. Click the [Down] button of the target component.

   A certain time is required for the start.

   The start result can be confirmed by the LEDs on the target component. The result of the start operation is registered in the event log.

Sample screen of ft server utility



Check and Clear of MTBF Information

The MTBF information of a component can be viewed or cleared (initialized).

NEC Express5800/ft series manages the MTBF (mean time between failure) of each component. If a fault occurs in a component, the NEC Express5800/ft series calculates the MTBF of the component again. If the calculated value is lower than the pre-defined threshold, the NEC Express5800/ft series disables the component to be used.

Contact your maintenance personnel if such a symptom as above occurs.

IMPORTANT: A disabled component with the MTBF lower than the threshold can be forcibly enabled by clearing the MTBF. However, contact your maintenance personnel for the forced use of such a component.

To clear the MTBF information of a component with NEC ESMPRO Manager, use the [Maintenance] tree of the component of the [FTServer] tree of the data viewer. Open the tree of the component whose MTBF information is to be cleared and select the [Maintenance] tree.

To clear the MTBF information of a component with the ft server utility, use the utility screen of the component. The table below shows the potential cases in which the MTBF information of a component is to be cleared. Contact your maintenance personnel for clearing MTBF information.

Component	MTBF clear	
	Remote	Local
CPU Module	To start the module forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module. Executable in the following module state (this can be viewed on manager screen): • Broken MTBF is lower than the threshold.	To start the module forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module. Executable in the following module state: • Only the red LED is on and the event indicating that MTBF is lower than the threshold is registered in the event log.
PCI Module or Expansion PCI Module	Same as above	Same as above
Ethernet Adapter	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): Broken MTBF is lower than the threshold. You can clear MTBF information by unplugging and plugging the live wire of the PCI module/expansion PCI module.	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): • Only the red LED is on and the event indicating that MTBF is lower than the threshold is registered in the event log. • You can clear MTBF information by unplugging and plugging the live wire of the PCI module/expansion PCI module.
SCSI Adapter	–	Same as above

Component	MTBF clear	
	Remote	Local
SCSI Enclosure	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): Broken MTBF is lower than the threshold.	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): Only the red LED is on and the event indicating that MTBF is lower than the threshold is registered in the event log.
SCSI Electronics	Same as above	Same as above
SCSI Slot	Same as above	Same as above

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

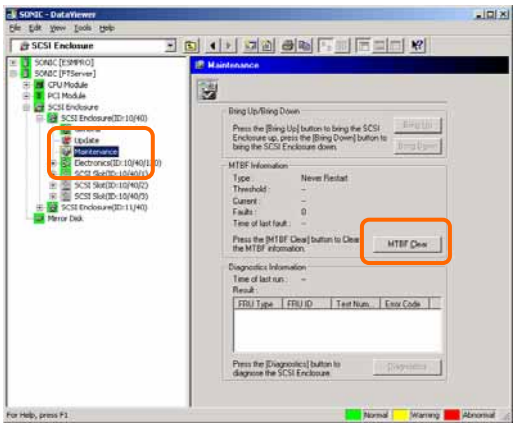
Procedure in NEC ESMPRO Manager

Perform the procedure below before replacement of a component.

1. Select the target component in the [FTServer] tree.
2. Check the current state with the "State" display on the target component screen.
3. Click the [MTBF Clear] button in the [Maintenance] screen for the target component.

   The MTBF clearing result can be confirmed by "State" on the target component screen. The result of the MTBF clearing operation is reported by the NEC Express5800/ft series as an alert.
4. Start the component.

Sample screen of NEC ESMPRO Manager



[Maintenance] screen of SCSI enclosure
[SCSI Enclosure] – [Maintenance]

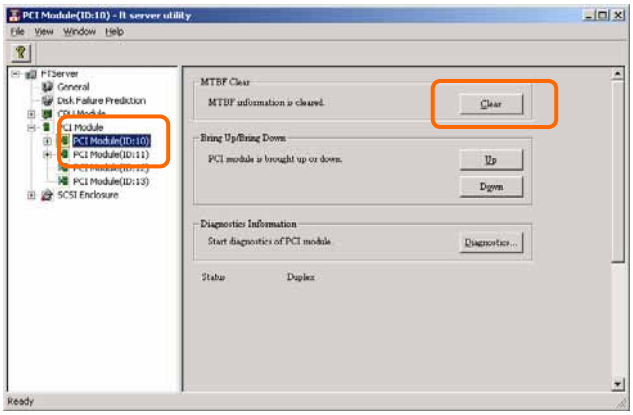
Procedure in the ft server utility

Perform the procedure below before replacement of a component.

1. Select the target component by using the ft server utility.
2. Check the current state of the target component with the LEDs and event log.
3. Click the [Clear] button in [MTBF Clear] of the target component.

   The MTBF clearing result can be confirmed by the LEDs on the target component. The result of the MTBF clearing operation is registered in the event log.
4. Start the component.

Sample screen of ft server utility



[PCI Module]

Diagnostics

The NEC Express5800/ft series provides the self-check diagnosis function for some components. If a fault occurs in a component, the NEC Express5800/ft series can diagnose the component to detect the fault.

To diagnose a component with the NEC ESMPRO Manager, use the [Maintenance] tree of the component in the data viewer. Open the tree of the component to be diagnosed and select the [Maintenance] tree.

To diagnose of a component with the ft server utility, use the utility screen of the component.

The table below shows the potential cases in which a component is to be diagnosed.

Component	Diagnosis	
	Remote	**Local**
CPU Module	When a phenomenon causing the module to be down occurs or a phenomenon supposed to be a malfunction occurs. Executable in any of the following module states (this can be viewed on manager screen): • Removed • Broken • Shot • Firmware Update Complete To diagnose the module under operation, bring down the module before the diagnosis.	When a phenomenon causing the module to be down occurs or a phenomenon supposed to be a malfunction occurs. Executable in any of the following module states: • When the status LED 1 is red and the status LED 2 is off Only the status LED 1 illuminates red when the module is in one the following states: • Removed • Broken • Shot • Firmware Update Complete (no fault found by diagnosis) To diagnose the module under operation, bring down the module before the diagnosis.
PCI Module or Expansion PCI Module	Same as above	Same as above

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Procedure in NEC ESMPRO Manager

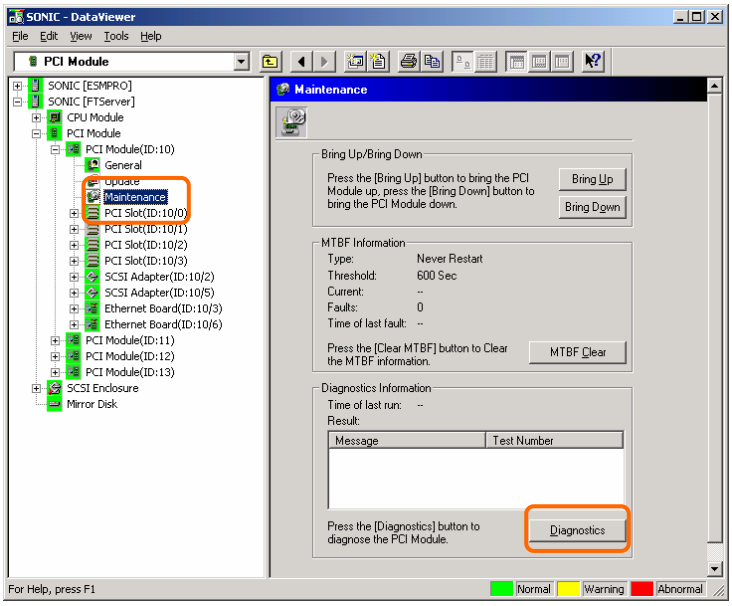
1. Select the target component in the [FTServer] tree.
2. Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.
3. Click the [Diagnostics] button in the [Maintenance] screen for the target component.

   The diagnosis result can be confirmed by "Result" of the diagnosis on the target component screen. The result of the diagnosis is reported by the NEC Express5800/ft series as an alert.

   The result of diagnosis executed last is displayed in the [Diagnosis Information] column. In addition, if a fault is detected by the result of the diagnosis, the state of the [General] tree of the component is changed.

IMPORTANT: In ft control software 3.0, the diagnosis result is not displayed in the "Result:"of "Diagnostics Information". Confirm the result by the event log.

Sample screen of NEC ESMPRO Manager



[Maintenance] screen of PCI module/expansion PCI module
[PCI Module] – [Maintenance]

Procedure in the ft server utility

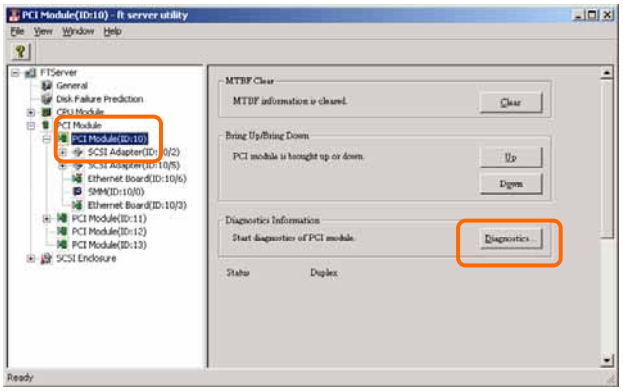
1. Select the target component by using the ft server utility.
2. Check the current state of the target component with the LEDs. If the component is operating, stop the component.
3. Click the [Diagnostics] button in the [Diagnosis Information] on the target component.

   The diagnosis result can be confirmed by the LEDs on the target component. The result of the diagnosis is registered in the event log.

   IMPORTANT: The diagnosis result is not displayed on the screen displayed by clicking [Diagnostics…].

4. Start the component.

Sample screen of ft server utility



[PCI Module]

Firmware Update

NEC Express5800/ft series can update firmware (including BIOS) if some hardware components operate in the online state (in which the system continues the operation but the component trying to update firmware or BIOS is stopped).

To update firmware with NEC ESMPRO Manager, use the [Update] tree of the component in the data viewer. Open the tree of the component for which firmware is updated and select the [Update] tree.

To update the firmware of a component with the ft server utility, use the utility screen of the component.

To update the firmware of a component, the firmware image file of the firmware for update must previously be stored in the managed server. On the firmware update screen, specify the path to the firmware image file for update.

The table below shows the potential cases in which the firmware of a component is to be updated.

Component	Firmware update	
	Remote	Local
CPU Module	When BIOS must be updated to new one. Executable in any of the following module states (this can be viewed on manager screen): • Removed • Broken or forced stop • No fault found by diagnosis To update the module under operation, bring down the module before the update.	When BIOS must be updated to new one. Executable in the following module state: • When the status LED 1 is red and the status LED 2 is off Only the status LED 1 illuminates red when the module is in one of the following states: • Removed • Broken or forced stop • No fault found by diagnosis (Firmware Update Complete) To update the module under operation, bring down the module before the update.

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Procedure in NEC ESMPRO Manager

1. Save the image data of the update firmware in an arbitrary directory of the NEC Express5800/ft series.

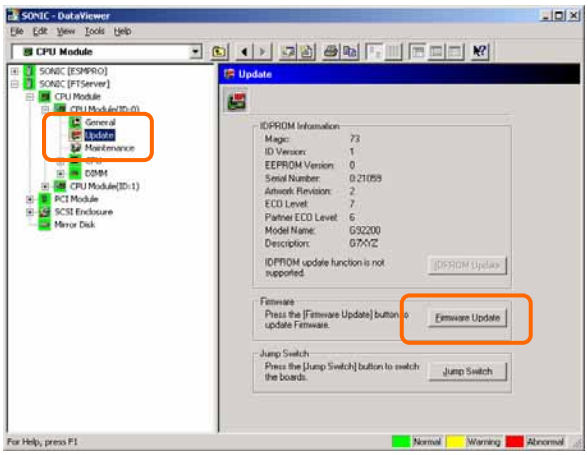
   Save the image data in any way. Write down the path to the directory in which the image data is saved.

2. Select the target component in the [FTServer] tree.

3. Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.

4. Click the [Firmware Update] button in the [Update] screen for the target component.

Sample screen of NEC ESMPRO Manager

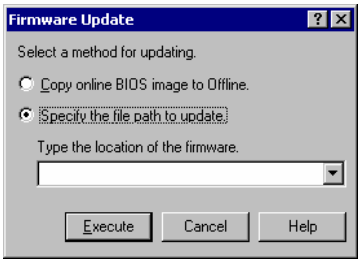


[Update] screen of CPU module
[CPU Module] – [Update]

5. Select [Specify the file path to update], enter the directory in which the updated firmware specified in the input box in step 1 is saved, and click the [Execute] button.

   Perform the firmware update.

   The update result can be confirmed by the state on the target component screen (indication of "Firmware update completed"). The result of the update processing is reported by the NEC Express5800/ft series as an alert.



6. After the BIOS for a single CPU module is completed, click the [Jump Switch] button. The module completely updated is started and the active module is stopped.

7. Start the other module stopped.

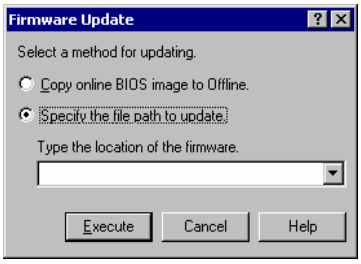
   Starting the module causes the firmware to be updated automatically. However, if the [Enable automatic firmware update] property is invalid, update the module in the procedure as follows:

   (1) Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.

   (2) Click the [Firmware Update] button in the [Update] screen for the target component.

   (3) Select the update method in the [Firmware Update] dialog box and click the [Execute] button.

   (4) Start the module.



Even if you do not have the image data of firmware for update, the firmware can be copied from the other module.

By starting the module, the firmware will be updated automatically. However, when the [Enable automatic firmware update] property is disabled, follow the steps below to update the firmware:

1. Start the system using the module of the firmware copy source.

   See the current status by the "Status" indication on the target component screen of the copy destination and confirm that it is stopped.

2. On the [Update] screen of the target component, click [Firmware update].

3. When a firmware updating dialog appears, check [Copy online BIOS image to Offline] and execute it.

   Firmware is updated by copying the firmware on the online side to the offline side.

4. Start the stopped module.

Procedure in ft server utility

1. Save the image data of the update firmware in a desired directory of the NEC Express5800/ft series.

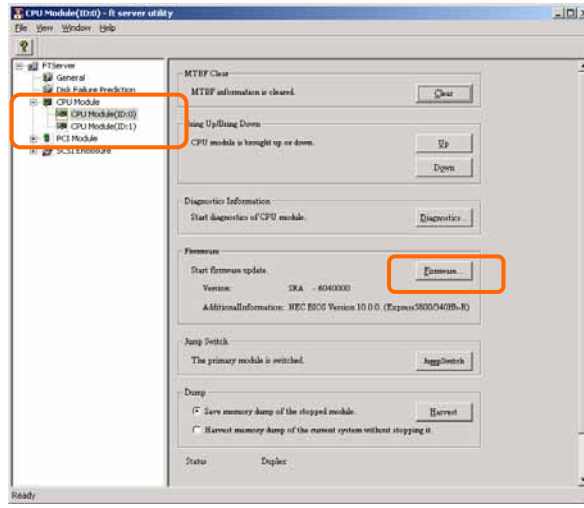
   Save the image data in some manner. Write down the path to the directory in which the image data is saved.

2. Select the target component with the ft server utility.

3. Check the current state of the target component with the LEDs. If the component is operating, stop the component.

4. Click the [Firmware...] button for the target component.

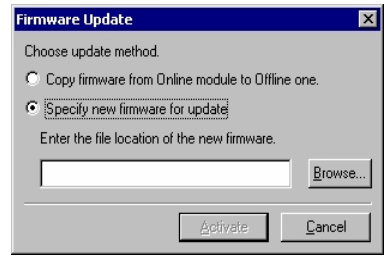
Sample screen of ft server utility



[CPU Module]

5. Select [Specify new firmware for update], enter the directory in which the updated firmware specified in the input box in step 1 is saved, and click the [Activate] button.

   Perform the firmware update.



6. Check the update result with the event log.

7. After the BIOS for a single CPU module is completed, click the [Jump Switch] button.

   The module completely updated is started and the module under operation is stopped.

8. Start the other inactive module.

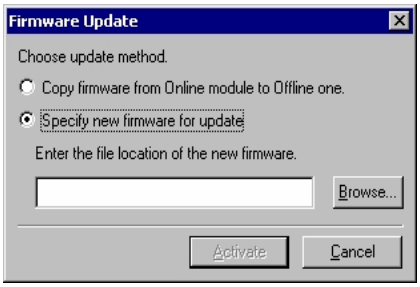
   Starting the module causes the firmware to be updated automatically. However, if the [Enable automatic firmware update] property is disabled, update the module in the procedure as follows:

   (1) Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.

   (2) Click the [Firmware...] button for the target component.

   (3) Select the update method in the [Firmware Update] dialog box and click the [Activate] button.

   (4) Start the module.



Even if you do not have the image data of firmware for update, the firmware can be copied from the other module.

By starting the module, the firmware will be updated automatically. However, when the [Enable automatic firmware update] property is disabled, follow the steps below to update the firmware:

1. Start the system using the module of the firmware copy source.

   See the current status by the "Status" indication on the target component screen of the copy destination and confirm that it is stopped.

2. Click the [Firmware...] button for the target component.

3. When a firmware updating dialog appears, check [Copy firmware from Online module to Offline one.] and execute it.

   Firmware is updated by copying the firmware on the online side to the offline side.

4. Start the stopped module.

Dump Collection

To collect the dump file with NEC ESMPRO Manager, use [CPU Module] →[Maintenance] tree in the data viewer.

To collect the dump with the ft server utility, use the utility screen of the component.

IMPORTANT: Acquire the dump only for the examination of a fault.

The dump can be collected in two ways. In each way, the dump file is collected with the same path and file name "%SystemDrive%\NECDump\MEMORY.DMP" as the dump file of the OS standard.

- Collecting dump of inactive module

  The dump is acquired from the inactive CPU module (due to the occurrence of a fault or forced stop).

- Collecting dump under system operation

  Either of the CPU modules is entered into the offline state and the dump is collected during system operation. After the acquisition, the CPU module is returned to the online state again. This can be done only in the duplex system.

The table below shows the potential cases in which the dump is acquired.

Component	Saving dump of stopped module		Saving dump of component under system operation	
	Remote	Local	Remote	Local
CPU Module	–	When a fault or malfunction occurs in the system. Save the dump if requested by maintenance personnel. Executable in the following module state: • Only the red LED is on However, this function operates only in a fault state. An execution error occurs in any other cases. Only the red LED is on when the module is in one of the following states: • Removed • Broken • Shot • Firmware Completion of update • No fault found by diagnosis	When a fault or malfunction occurs in the system. Save the dump if requested by maintenance personnel. Executable in the following module state (this can be viewed on manager screen): • Duplex	When a fault or malfunction occurs in the system. Save the dump if requested by maintenance personnel Executable in the following module state: • When only the green LED is on and the module is in redundant configuration state Only the green LED is on when the module is in the following state: • Duplex

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Procedure in NEC ESMPRO Manager

The [Dump] button of NEC ESMPRO Manager performs the function of "saving dump during system operation."

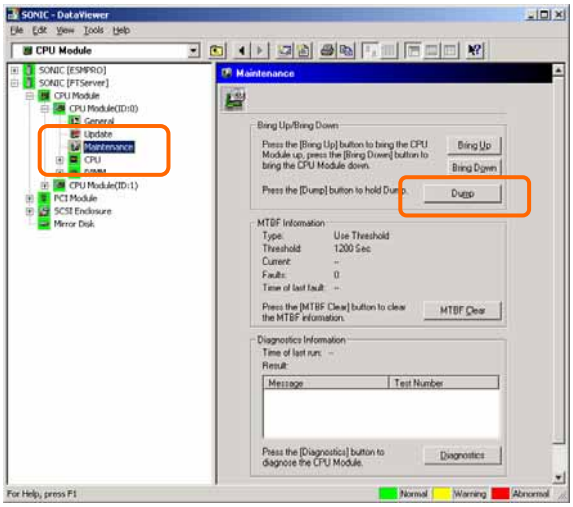
1. Select [CPU Module] in the [FTServer] tree.
2. Check the current state with the "State" display on the target component screen.
3. Click the [Dump] button in the [Maintenance] screen for the target component.

   A certain time is required for the dump saving.

   The dump is stored as %SystemDrive%\NECDump\MEMORY.DMP on the managed server.

   The result of the dump saving is reported by the NEC Express5800/ft series as an alert.

Sample screen of NEC ESMPRO Manager



[Maintenance] screen of CPU module
[CPU Module] – [Maintenance]

Procedure in ft server utility

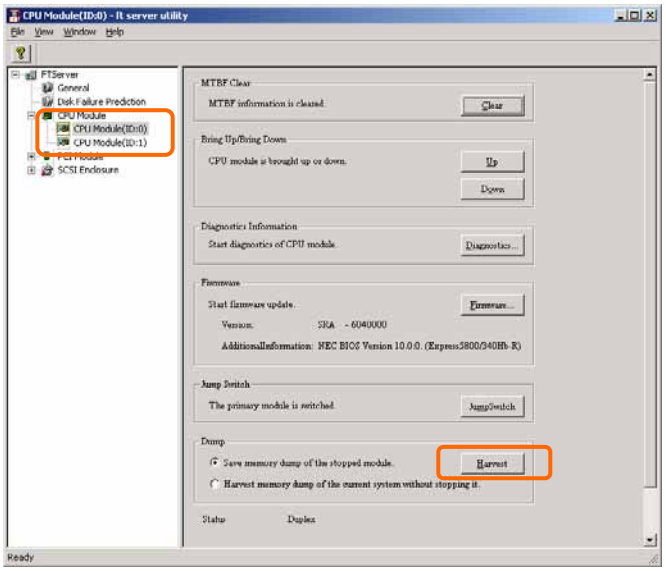
1. Select the target CPU module by using the ft server utility.
2. Check the current state of the target CPU module with the LEDs.
3. Select the dump acquisition method with [Dump] of the target CPU module and click the [Harvest] button.

   A certain time is required for the dump acquisition.

   The dump is stored as %SystemDrive%\NECDump\MEMORY.DMP on the server.

   The result of the dump acquisition can be confirmed in the event log.

Sample screen of ft server utility



[CPU Module]

SCSI Bus Reset

The SCSI bus can be reset.

Select [FTServer] tree→[PCI Module]→[SCSI adapter]→[SCSI bus] screens with the ft server utility. Open the tree of the component for which the SCSI bus is to be reset and select the [SCSI bus] tree.

The table below shows the potential cases in which the SCSI bus is reset.

Component	Bus reset	
	Remote	Local
SCSI Bus	–	When a malfunction occurs in the SCSI bus to require the bus reset. Provide the bus reset if requested by maintenance personnel. Executable in the following module state: • Only the green LED is on Only the green LED is on when the module is in the following state: • Duplex

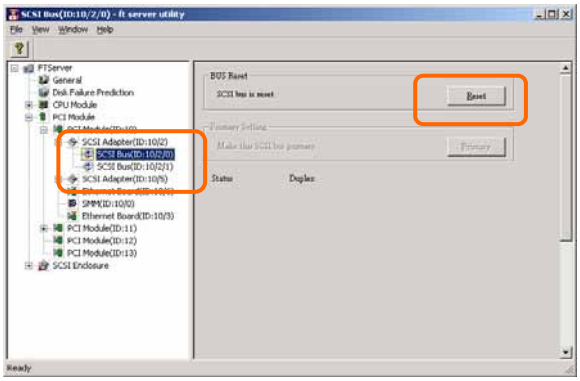
Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Reset the SCSI bus with the ft server utility in the following procedure. NEC ESMPRO Manager cannot reset the SCSI bus. However, because the ft server utility cannot check the setup of the SCSI bus, check the bus state with NEC ESMPRO Manager in advance.

1. Select the target SCSI Bus in the [FTServer] tree.
2. Click the [Reset] button for [BUS Reset] in the SCSI bus screen.

   The modification result can be checked in the event log.

Sample screen of ft server utility



[PCI Module] – [SCSI Adapter] – [SCSI Bus]

Setup of Preventive Disk Maintenance

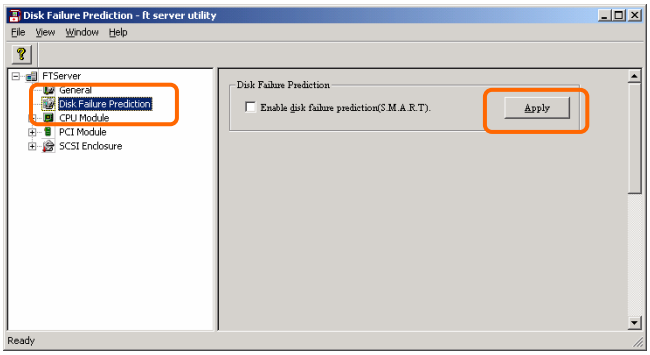
In this section, the preventive disk maintenance (S.M.A.R.T.) is configured.

If the preventive disk maintenance (S.M.A.R.T.) is enabled (by checking Enable on the setting screen), the disk fault monitoring function is enabled to detect possible disk faults. Disabling the preventive disk maintenance disables the disk fault monitoring function.

The table below shows the potential cases in which the setup of the preventive disk maintenance is modified.

IMPORTANT: The disk failure prediction (S.M.A.R.T.) feature is not supported in this server. Use ft server utility to disable this feature.

Sample screen of ft server utility



[Preventive Disk Maintenance]

Setup of System Operation

The following properties can be set as the operation setup of the whole system.

- Quick dump

  If this property is enabled (by checking "Enable" on the setup screen), the dump is acquired in parallel with the system startup if a fault occurs in the system. If this property is disabled, the dump is acquired by the dump function normally provided by OS.

  The initial setup value is "Enable."

- Auto firmware update

  If a new CPU module containing BIOS different from that of the existing CPU module in version with this property being enabled (by checking "Enable" on the setup screen), the BIOS of the new CPU module is updated to the BIOS of the existing CPU module to match with each other. If this property is disabled, the BIOS of the new CPU module is not update automatically.

  The initial setup value is "Enable."

- Auto module start

  If this property is enabled (by checking "Enable" on the setup screen), the CPU or PCI module/expansion PCI module newly inserted is automatically started to be operable. If this property is disabled, the module is not started automatically.

  The initial setup value is "Enable."

IMPORTANT:
In the NEC Express5800/ft series with ft control software over 3.0, it is always necessary to set “Enable.” Do not set “Disable.”

The system operation can be set on [FTServer] tree→[General] screen of the ft server utility.

The table below shows the potential cases in which the system operation setup is changed. Contact your maintenance personnel for the change of the system operation setup. Setting change will take effect after system reboot. However, the utility does not indicate that reboot is required.

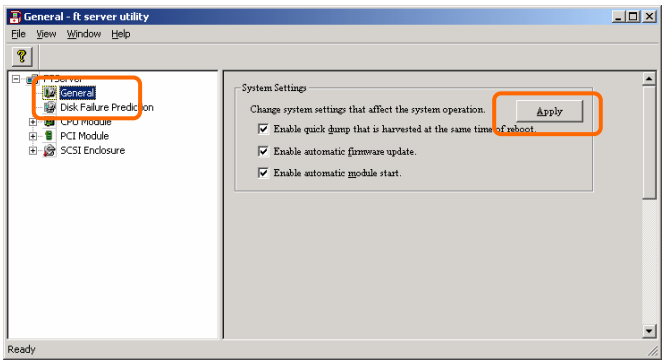
Component	Quick dump		Auto firmware update		Auto module start	
	Remote	Local	Remote	Local	Remote	Local
Whole system	–	Executable if the system is operating. When dump is acquired by using the dump function normally installed in OS at occurrence of system fault.	–	Executable if the system is operating. When firmware is updated manually at insertion of new CPU module	–	Executable if the system is operating. When firmware is updated manually at insertion of new CPU/PCI module/expansion PCI module

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Configure the system settings using the ft server utility in the following procedure. The system cannot be configured using the NEC ESMPRO Manager.

1. Select [General] in the [FTServer] tree.
2. Check the property of carrying out the modification with [System Settings] (or cancel the check).
3. Click the [Apply] button.

Sample screen of ft server utility



Refresh of View based on State Change Alert Setting

A new function is supported so that NEC ESMPRO Manager window will be updated on a system state change basis (in other words, whenever necessary). This function is OFF by default. See the [Setting] below about how to turn it ON.

NEC ESMPRO Manager window is updated by one minute-interval polling by default. Therefore, there is some time-lag for NEC ESMPRO Manager to recognize changes in NEC Agent. By using this function, the time-lag can be reduced. However, it may consume a little bit more network band width since each state change will be notified to NEC ESMPRO Manager as some kind of alert.

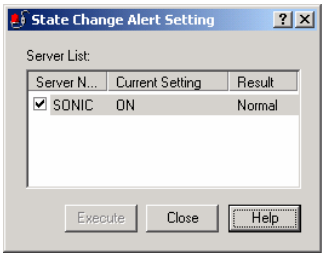
[Setting]

1. Select [Program] → [NEC ESMPRO Manager] from the Start menu and click [Manager Settings].



[Manager Settings] dialog box

2. Check [Enable the State Change Alert Setting].
3. Click the [Agent Setting...] button.



[State Change Alert Setting] dialog box

4. Check the name of servers sending the state change alert to the Manager when the Agent recognizes changes in the state.

   Click the [Execute] button for the setting change to take effect.

BMC Firmware Update

The firmware of the BMC on the PCI module can be updated.

The BMC firmware can be updated by using the ft server utility.

To update the BMC firmware, the firmware image file must previously be updated on the managed server. On the BMC firmware update screen, specify the pass of the image file of the firmware to be updated.

IMPORTANT: Contact your maintenance engineer for the update of the BMC firmware.

Component	BMC firmware update	
	Remote	Local
BMC	–	When update to new firmware is required.

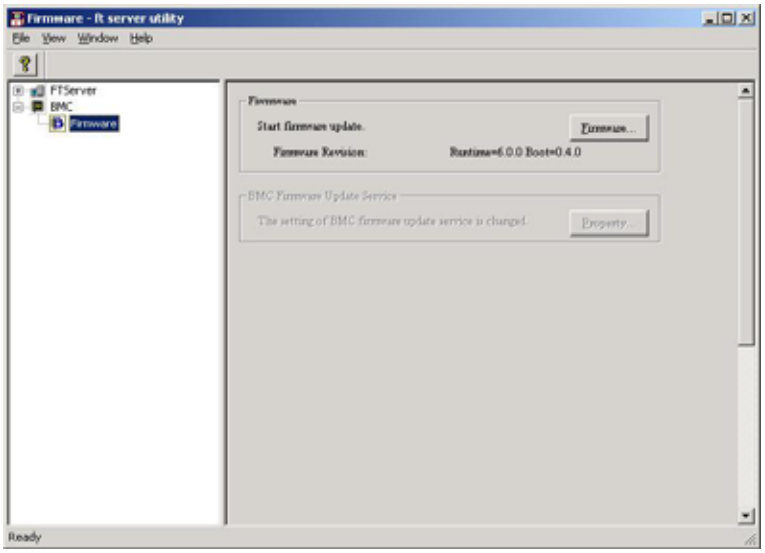
Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Procedure of Update from ft server utility

Update the firmware in the following procedure.

1. Click [Firmware] → [Firmware...].

[Firmware Update] dialog box appears.



2. Enter the location to store the new firmware, and click [Activate].

[Confirmation] dialog box appears.



3. Click [OK].

Execute the firmware update.



SMM Firmware Update

The firmware of the SMM on the PCI module can be updated.

The SMM firmware can be updated by using the ft server utility.

To update the SMM firmware, the firmware image file must previously be updated on the managed server. On the SMM firmware update screen, specify the pass of the image file of the firmware to be updated.

IMPORTANT: Contact your maintenance engineer for the update of the SMM firmware.

Component	SMM firmware update	
	Remote	Local
SMM	–	When update to new firmware is required.

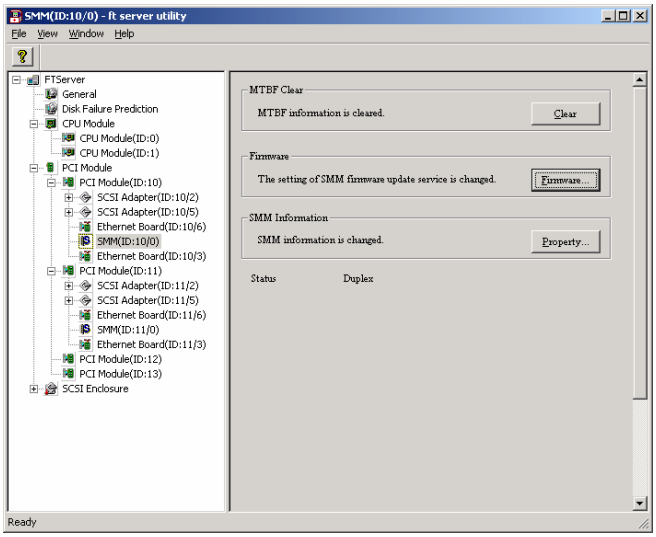
Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Procedure of Update from ft server utility

Update the firmware in the following procedure.

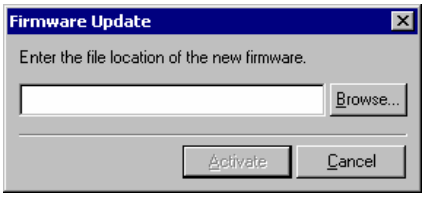
1. Click [Firmware] → [Firmware...].

   [Firmware Update] dialog box appears.



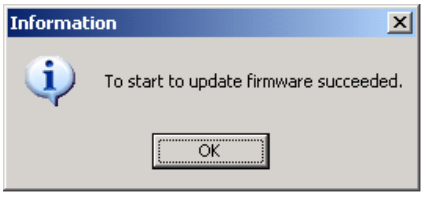
2. Enter the location to store the new firmware, and click [Activate].

   [Confirmation] dialog box appears.



3. Click [OK].

   Execute the firmware update.



4. When updating for one SMM firmware completes, update another SMM firmware in the same manner.

Chapter 6

Maintenance

This chapter describes the daily maintenance of NEC Express5800/ft series and precautions when relocating or storing the server.

DAILY MAINTENANCE

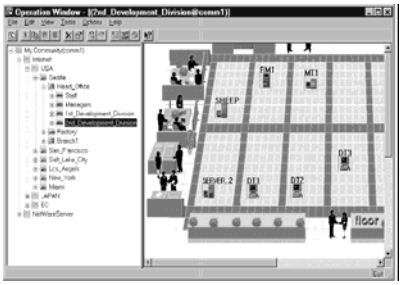
To use your NEC Express5800/ft series in best condition, check and maintain regularly as described below. If an error is found on your NEC Express5800/ft series, consult your sales agent.

Checking Alert

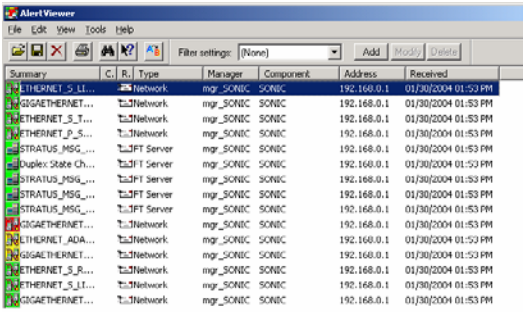
Monitor the failure occurrence by NEC ESMPRO during the system operation.

Always check whether any alert is reported to NEC ESMPRO Manager on the management PC. Check whether any alert is reported on the Operation Window, Data Viewer, or Alert Viewer of NEC ESMPRO Manager.

Viewers of NEC ESMPRO



Operation Window



Alert Viewer



Data Viewer

Checking STATUS LEDs

Check the LED indication on the front of the NEC Express5800/ft series or on hard disks installed in 3.5-inch hard disk drive bay when the server is powered on or powered off by the shut down operation. The functions and indications of LEDs are described in Chapter 2. If any indication that shows an error, contact your sales agent.

Making Backup Copies

NEC recommends you make backup copies of your valuable data stored in hard disks of the server on a regular basis. For backup storage devices suitable for the server and backup tools, consult with your sales agent.

Cleaning

Clean the server on a regular basis to keep the server in a good shape.

⚠ WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See "PRECAUTIONS FOR SAFETY" in Chapter 1.

- Do not disassemble, repair, or alter the server.
- Do not look into the CD-ROM drive.
- Disconnect the power plug before cleaning the server.

Cleaning the NEC Express5800/ft series

For daily cleaning, wipe the external surfaces of the server with a dry soft cloth. Follow the procedure below if stains remain on the surfaces:

IMPORTANT:

- To avoid altering the material and color of the server, do not use volatile solvents such as thinner or benzene to clean the server.
- The power receptacle, the cables, the connectors on the rear panel of server, and the inside of the server must be kept dry. Do not moisten them with water.

1. Make sure that the server is powered off.
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or warm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in Step 4.
6. Soak a soft cloth in water, squeeze it firmly and wipe the server with it once again.
7. Wipe the server with a dry cloth.
8. Wipe off dust from the fan exhaust opening on the rear of the server with a dry cloth.

Cleaning the Keyboard and Mouse

IMPORTANT: A keyboard and a mouse use USB interface. Therefore it is not necessary to power off the server when connecting or disconnecting them.

Disconnect the keyboard from the server while the devices in the system (the server and the peripheral devices) remain turned on. Wipe the keyboard surface with a dry cloth. Then connect the keyboard to the server.

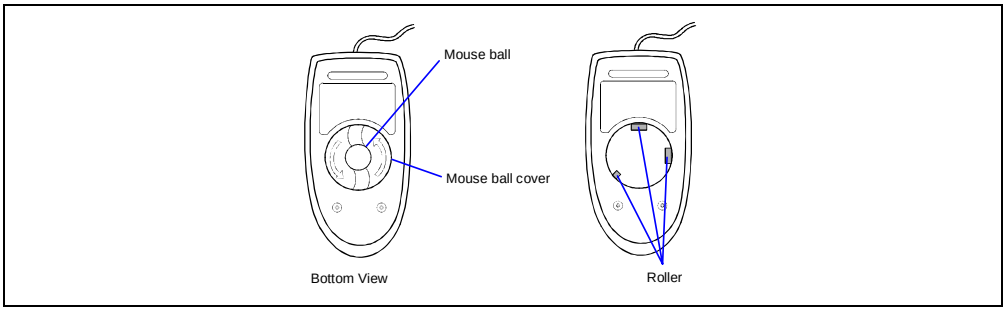
The mouse operation depends on the degree of smoothness of the internal ball rotation. To keep the mouse ball clean, use the mouse in a place with little dust. Follow the steps below to clean the mouse regularly:

1. Disconnect the mouse from the USB hub on the keyboard while the server remains powered on.
2. Turn the mouse upside down, and rotate the mouse ball cover counterclockwise to remove it. Take out the ball from the mouse.
3. Wipe the mouse ball with a dry soft cloth.

   If stains remain, use a soft cloth to wipe them off. Soak the soft cloth in neutral detergent that is diluted with water or warm water, and squeeze it firmly,
4. Wipe three small rollers inside the mouse with cotton swab.

   Use the cotton swab soaked with alcohol if stains remain.
5. Put the mouse ball back into the mouse.

   If the mouse or rollers are wet in steps 3 and 4, put it back after fully dried.
6. Place the mouse ball cover, and rotate it clockwise until it is locked.
7. Connect the mouse to the server (the USB hub of the keyboard).



Cleaning the Floppy Disk Drive

A read/write error may occur due to stains on the read/write head of the floppy disk drive.

Use the cleaner dedicated for floppy disk drive to clean the read/write head. It is recommended to clean the head on regular basis.

Cleaning CD-ROM

A dusty CD-ROM or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and CD-ROM regularly:

1. Make sure that the server is powered.
2. Press the Eject button on the front of the CD-ROM drive.
   The tray comes out.
3. Hold the CD-ROM lightly and take it out from the tray.

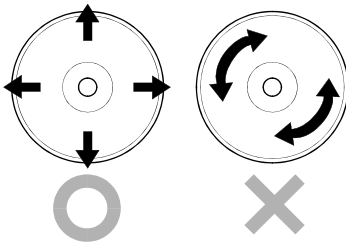
   IMPORTANT: Do not touch the signal side of the CD-ROM with your hand.

4. Wipe the tray with a dry soft cloth.

   IMPORTANT: Do not wipe the lens of the CD-ROM drive. Doing so may damage the lens and may cause a malfunction of the drive.

5. Gently push on the tray front to close the tray.
6. Wipe the signal side of the CD-ROM with a dry soft cloth.

   IMPORTANT: Wipe CD-ROMs from the center to the outside. Use only CD-ROM cleaner if necessary. Cleaning a CD-ROM with record spray/cleaner, benzene, or thinner causes damage to the CD-ROM contents. At worst, inserting the CD-ROM into the server may cause failure.



Cleaning Tape Drive

Dirt on the tape head may be a cause of unsuccessful backup and damage to tape cartridge. Clean the tape head regularly using a cleaning tape. For procedure and interval of cleaning as well as lifetime of a tape cartridge to use, see instructions included with the tape drive.

SYSTEM DIAGNOSTICS (CONSUMER)

The System Diagnostics (Consumer) runs several tests on the server.

Select [Tools] → [System Diagnostics] in the NEC EXPRESSBUILDER to diagnose the server.

Test Items

The following items are tested in system diagnostics (consumer).

- Memory
- CPU cache memory
- Hard disk used as a system
- Onboard LAN controller

IMPORTANT: When executing the system diagnostics (consumer), make sure to remove the LAN cable. Executing the system diagnostics with the LAN cable connected, the network may be influenced.

TIPS: On checking the hard disk, no data is written into the disk.

Startup and Exit of System Diagnosis (Consumer)

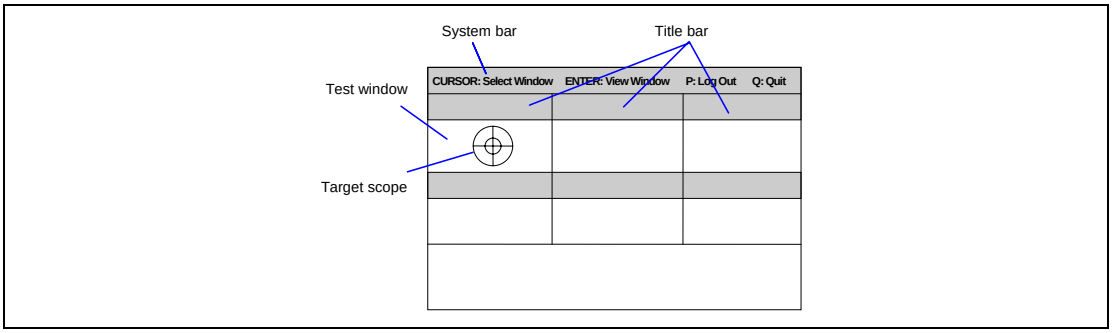
Procedures to start the diagnostic program are as follows:

1. Shutdown the OS, and power off the server. Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and power on the server.
4. Use the NEC EXPRESSBUILDER CD-ROM to reboot the server.

   The following menu appears when the server is started using the NEC EXPRESSBUILDER.
5. Select [Tools].



6. Select [System Diagnostics] and then select [System Diagnostics (Consumer)].



The system diagnosis (consumer) starts and will be completed in approximately three minutes.

When the diagnosis is completed, the following appears on the screen of the display unit.

System bar: Shows information including time of progress during the diagnostics. Upon completion of the diagnostics, descriptions on key operations to navigate the window are shown.

Title bar: Shows items for diagnosis. If an error is detected, the bar is indicated in red.

Test window: Shows the progress or result of diagnostics.

Target scope: A cursor to select the test window. Use the cursor keys on the keyboard to move it to another test window. (Move the target scope to a desired window and press **Enter**. Now you can view detailed information on the selected window. To return to the previous window, press **Enter** once again.)
Some system configurations do not display the target scope but change the color of the test window's frame.

If an error is detected during the system diagnostics, the title bar turns in red, and error information is displayed in red characters. Note down the error message and contact your sales agent.

7. Press **Q** and select [Reboot] from the menu.

The server restarts and the system is started from the NEC EXPRESSBUILDER.

8. Exit the NEC EXPRESSBUILDER, and remove the CD-ROM from the CD-ROM drive.

9. Power off the server and unplug the power cord from the receptacle.

10. Reconnect all the LAN cables to the server.

11. Plug the power cord.

This completes the system diagnostics (consumer).

OFF-LINE MAINTENANCE UTILITY

The Off-line Maintenance Utility is not included in your NEC EXPRESSBUILDER CD-ROM.

RELOCATING/STORING THE NEC Express5800/ft series

Follow the procedure below to relocate or store the server. (Users should not attempt to remove the rack-mountable server from the rack assembly.)

⚠ WARNING



Do not attempt to remove the server.

To avoid the risk of personal injury, users should not attempt to remove the server from the rack assembly. Removal of the server from the rack assembly should be performed by suitably trained maintenance personnel.

⚠ CAUTION



Observe the following instructions to use the server safely. There are risks of a fire, personal injury, or property damage. See “PRECAUTIONS FOR SAFETY” in Chapter 1 for details.

- Never attempt to lift the CPU module only by yourself.
- Do not install the server in any place other than specified.
- Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.

IMPORTANT:

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact the sales agent.
- Make sure to make a backup copy of your valuable data in the hard disk, if any.
- When moving the server with hard disks, make sure not to give a shock to the hard disks.
- When storing the server, keep it under storing environment conditions (temperature: -10 to 55°C, humidity: 20 to 80%, non-condensing).

1. Remove the front bezel.
2. Take a floppy disk and a CD-ROM out of the server, if any.
3. Power off the server.
4. Unplug the power cord of the server from a power outlet.
5. Remove all the cables from the server.
6. Remove the server modules from the rack cabinet.
7. Hold the CPU module by its bottom with at least two persons to carry it.
   To carry the PCI module or expansion PCI module, hold it by its bottom.

8. Protect the server with the shock-absorbing materials, and pack it securely.

IMPORTANT:

Check and adjust the system clock before operating the server again after relocating or storing it.

If the server and built-in optional devices are moved from a cold place to a warm place in a short time, condensation will occur and cause malfunctions and breakdown when these are used in such state. When you start operating these equipments again after the transportation or the storage, make sure to wait for a sufficient period of time to use them in the operating environment.

If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment is performed, contact your sales agent.

(This page is intentionally left blank.)

Chapter 7

Troubleshooting

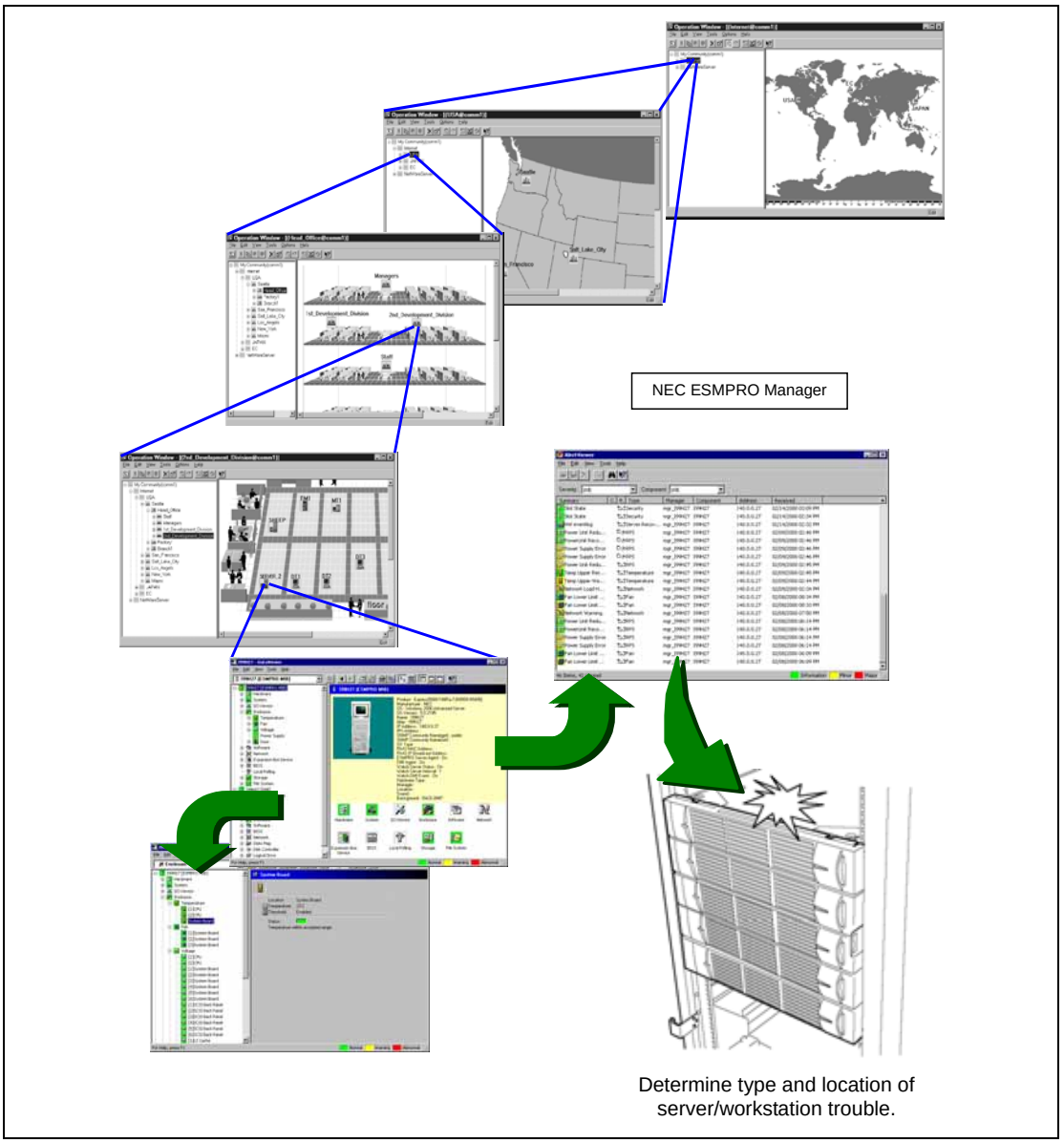
If the product does not work properly, see this chapter before deciding that it is a breakdown.

TO LOCATE THE ERRORS

Use NEC ESMPRO to monitor the occurrence of fault during the system operation.

Especially take note on whether any alert is reported to NEC ESMPRO Manager on the management PC. Check whether any alert is reported on the Operation Window, Data Viewer, or Alert Viewer of NEC ESMPRO Manager.

[Example]



ERROR MESSAGES

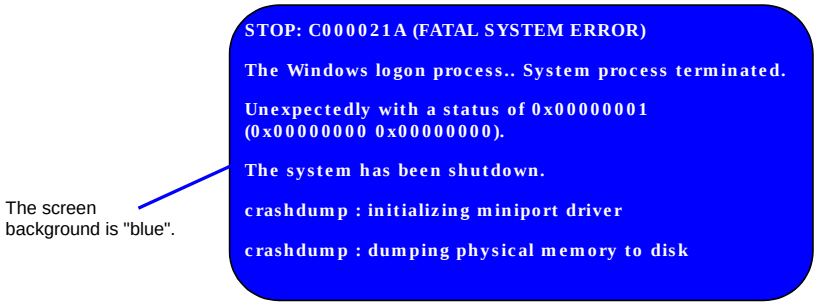
If the NEC Express5800/ft series enters the abnormal state, the error is posted by various means. This section explains the types of error messages.

Error Messages by LED Indication

The LEDs on the front and rear panels of the NEC Express5800/ft series and near the handles of hard disks inform the user of the various server statuses by the colors and the patterns of going on, going off, and flashing. If trouble seems to have occurred, check the LED indication. For the LED indication and meanings, see Chapter 2.

Windows Server 2003, Enterprise Edition Error Messages

If a fatal error (e.g., a STOP or system error) occurs after Windows Server 2003, Enterprise Edition starts, the screen of the display unit turns blue and displays detailed error messages.



Take notes of the messages displayed on the screen, and call your sales agent.

If a fatal error occurs, the server automatically executes memory dump processing and saves the memory dump data in an arbitrary directory. (See "Set Memory Dump (Debug Information" described in the User's Guide (Setup).) The maintenance personnel of your sales agent may ask you to provide this data. Thus, copy the file into a medium (e.g., DAT) to be ready to pass it to the maintenance personnel.

IMPORTANT: A message may appear indicating that virtual memory is insufficient when you restart the system after a STOP or system error has occurred. Ignore the message and start the system.

CHECK: Before copying the file into a medium, start the Event Viewer to confirm that the Save Dump event log is included in the system event logs and the memory dump has been saved.

The following message may be displayed during usage.

> "Your system is low on virtual memory. To ensure that Windows runs properly, increase the size of your virtual memory paging file. For more information, see Help."

When this message is displayed, extend a physical memory following the procedure below.

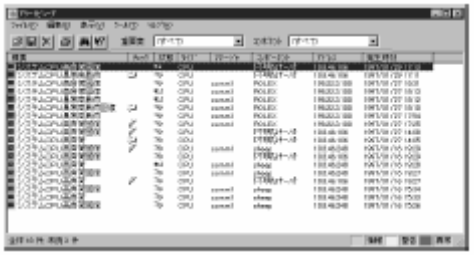
1. Add a physical memory
2. Change the configuration of the paging file (Change more than < physical memory capacity × 1.5 >)

The system also displays a warning message if an internal device or peripheral equipment (e.g., disk, network, or printer) encounters an error. Take notes of the message, and call your sales agent.

Server Management Application Error Message

If the server management tool such as NEC ESMPRO Agent, NEC ESMPRO Manager, or GAMServer has been installed in the NEC Express5800/ft series or management PC, you can obtain the error information from the display unit of the server or management PC.

See Chapter 5 in this User's Guide, the separate volume of the User's Guide (Setup) or online documentation for details.



SOLVING PROBLEMS

When the server fails to operate as expected, see the following to find out your problem and follow the given instruction before asking for repair.

If the server still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your sales agent.

Problems with NEC Express5800/ft series

Fail to power on the server:

- ❑ Is the server properly supplied with power?
  - → Check if the power cord is connected to a power outlet (or UPS) that meets the power specifications for the server.
  - → Check if the two pieces of the provided power cord are connected to the main unit properly.
  - → Make sure to use the power cord provided with the server. Check the power cord for broken shield or bent plugs.
  - → Make sure the power breaker for the connected power outlet is on.
  - → If the power cord is plugged to a UPS, make sure the UPS is powered and it supplies power. See the manual that comes with the UPS for details.

    Power supply to the server may be linked with the connected UPS using the BIOS setup utility of the server.

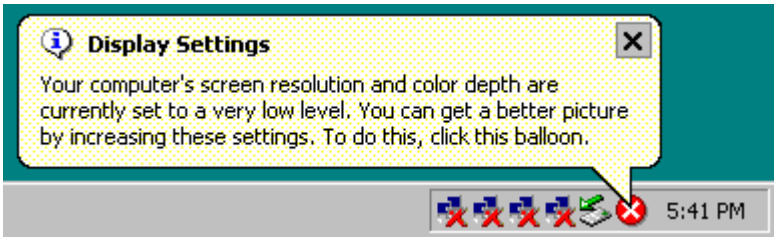
    <Menu to check: [Advanced] → [AC-LINK] → [Power On]>
- ❑ Did you press the POWER switch?
  - → Press the POWER switch on the front of the NEC Express5800/ft series to turn on the power (the POWER LED lights).
- ❑ Did you install the CPU/PCI module properly?
  - → Check if the CPU/PCI module is properly installed in the server. Secure the module with screw located on the module handle.
- ❑ EvntAgent log is recorded in the application event log.
  - → This event does not have any influence to the system nor to SNMP services thus no measurement needs to be taken.

    "1015: TraceLevel parameter not located in registry;
    Default trace level used is 32.

    1003: TraceFileName parameter not located in registry;
    Default trace file used is .

"Display Settings" on the bottom-right of the window:

→ Select [Control Panel] – [Display] - [Settings] tab, and change the [Color quality] to "Medium (16 bit)" or higher.



The screen turns blue during OS boot:

→ Wait for the period of time you set a BIOS [Boot Monitoring]; after the boot pair is automatically swapped, the server will be rebooted and the OS will start up.

→ Start the OS from the other PCI module's hard disk.

Fail to power off the server:

❑ Is the POWER switch enabled?

→ Restart the server and start the BIOS setup utility.

<Menu to check: [Security] → [Power Switch Mask] → [Unmasked]>

POST fails to complete:

❑ Is the DIMM installed?

→ At least four DIMMs are populated in the DIMM bank 0 for operation.

❑ Is the memory size large?

→ The memory check may take a time if the memory size is large. Wait for a while.

❑ Did you perform any keyboard or mouse operation immediately after you started the server?

→ If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server once again. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.

❑ Does the server have appropriate memory boards or PCI card?

→ Operation of the server with unauthorized devices is not guaranteed.

Fail to access to internal or external devices:

- ❑ Are cables properly connected?

  → Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.

- ❑ Is that device compliant with NEC Express5800/ft series?

  → Operation of the server with unauthorized devices is not guaranteed.

- ❑ Is the power-on order correct?

  → When the server has any external devices connected, power on the external devices first, then the server.

- ❑ Did you install drivers for connected optional devices?

  → Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.

  → Some optional devices connected to the serial port require settings for I/O port address and operation mode. Refer to the manual that comes with the device to configure the device.

  <Menu to check: [Advanced] → [Peripheral Configuration]>

- ❑ Is SCSI controller (including options) configuration correct?

  → If the sever has an optional SCSI controller board and SCSI devices are hooked up to the server, make correct settings by the SCSI controller board's SCSI BIOS utility. For details, see manuals included with the SCSI controller board.

- ❑ Is SCSI device configuration correct?

  → If external SCSI devices are connected to the server, you need to make settings of SCSI ID and terminal resistance. For details, see manuals included with the SCSI device.

CPU not in Dual mode:

→ Check if the memory configuration is correct.

→ Check if third-party CPUs or memory (DIMM) are used.

Disk not in Dual mode:

→ Unless you perform mirroring (including reconfiguration after failed disks are replaced) in correct order, the mirror may not be (re)configured. Check if the steps were correct.

The keyboard or mouse fails to operate:

- ❑ Is the cable properly connected?

  → Make sure that the cable is connected to the correct connector on the rear of the server.

- ❑ Are the keyboard and mouse are compliant with NEC Express5800/ft series?

  → Operation of the server with unauthorized devices is not guaranteed.

- ❑ Is BIOS configuration correct?

  → The keyboard and mouse may be disabled with the BIOS setup utility of the server. Check the settings with the BIOS setup utility.

  <Menu to check: [Main] → [Keyboard Features]>

- ❑ Does the server have drivers installed?

  → Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

- ❑ Are you using a PS2-USB conversion connector?

  → The PS2-USB conversion connector is not supported. Use the keyboard and mouse specified by NEC.

Screen freezes, keyboard and mouse don’t work:

→ If the amount of memory is large, it takes time to copy the memory in dual mode and the system stops working during the copying. It’s not system trouble.

Message "New Hardware Found" appears:

→ Such a message may appear at the system startup or when a PCI module is replaced and incorporated into the system. This is due to the server’s operating specifications and does not pose any problem.

Fail to access (read or write) to the floppy disk:

- ❑ Does the floppy disk drive contain a floppy disk?

  → Insert a floppy disk into the floppy disk drive until it clicks.

- ❑ Is the floppy disk write-protected?

  → Place the write-protect switch on the floppy disk to the "Write-enabled" position.

- ❑ Is the floppy disk formatted?

  → Use a formatted floppy disk or format the floppy disk in the floppy disk drive. Refer to the manual that comes with the OS for formatting a floppy disk.

Fail to access to the CD-ROM:

- ❑ Is the CD-ROM properly set in the CD-ROM drive tray?

  → The tray is provided with a holder to secure the CD-ROM. Make sure that the CD-ROM is placed properly in the holder.

- ❑ Is the CD-ROM applicable to the server?

  → The CD-ROM for Macintosh is not available for use.

- ❑ Is the CD-ROM on the PCI module whose POWER switch is on (primary module)?

  → Although there are two CD-ROM drives, you can only use the one located on the primary module whose POWER switch is on.

Fail to access the hard disk:

- ❑ Is the hard disk applicable to the server?

  → Operation of any device that is not authorized by NEC is not guaranteed.

- ❑ Is the hard disk properly installed?

  → Make sure to lock the hard disk with the lever on its handle. The hard disk is not connected to the internal connector when it is not completely installed (see Chapter 8). When the hard disk is properly installed, the drive power LED for the hard disk is lit while the server is powered.

Fail to start the OS:

- ❑ Is a floppy disk in the floppy disk drive?

  → Take out the floppy disk and restart the server.

- ❑ Is the NEC EXPRESSBUILDER CD-ROM (or the other bootable CD-ROM) in the CD-ROM drive?

  → Take out the CD-ROM and restart the server.

- ❑ Is the OS damaged?

  → Use the recovery process of the OS to attempt to recover the damaged OS.

OS behavior is unstable:

- ❑ Have you updated your system?

  → If you install a network driver after installing the OS, the OS may become unstable. For update procedure, see “System Repair” in the separate volume “User's Guide (Setup)”.

The system does not operate according to the configured settings of "Automatic Restart" at the occurrence of error.

→ The system may or may not restart automatically even if the "Automatic Restart" settings are made at occurrence of an error is set. If the system does not restart automatically, restart it in manual mode.

The power cannot be turned off while the blue screen of Windows Server 2003, Enterprise Edition is displayed.

→ The forced power-off (forced shutdown) procedure is necessary to turn off the power with the blue screen displayed. Keep pressing the POWER switch for 4 seconds. Pressing the POWER switch only once does not turn off the power in this case.

The server is not found on the network:

❑ Is the LAN cable connected?

→ Make sure to connect the LAN cable to the network port on the rear of the server. Also make sure to use the LAN cable that conforms to the network interface standard.

❑ Have the protocol and service already configured?

→ Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.

❑ Is the transfer speed correct?

→ Open the [Network Property] dialog box in Control Panel to specify the "Link Speed & Duplex" value the same as the value specified for HUB.

Transfer speed can be fixed by PROSet II.

Select an adapter to modify the setting from the tree on the left, for 100Base adapter, click the [Advanced] tab and make settings at "Link Speed & Duplex".

For 1000Base-T adapter click the [Link Config] tab.

Select [Enabled] "Auto Negotiation" and specify the transfer speed at

"Negotiable Speed and Duplexes".

(Only check the transfer speed to use.)

Icon of drive A is changed to that of removal disk:

→ Does not cause any problem.

Perflib-related logs are recorded in the application event log when system starting:

→ When system is starting, Perflib log may be registered to the application log.

The detailed information about an event log is described on Microsoft Product Support Services. Please check the contents.

- [INFO] Events for Performance Monitor Extensions
  http://support.microsoft.com/default.aspx?scid=kb;en-us;226494
- Application Log Events Generated When You Start Performance Counter Query
  http://support.microsoft.com/default.aspx?scid=kb;en-us;296187
- Event ID 2003 Warning Message Logged When Loading Performance Counters
  http://support.microsoft.com/default.aspx?scid=kb;en-us;267831

Visit the Microsoft Help and Support on regular basis where you can find other information than the above at:
http://support.microsoft.com/default.aspx?LN=en-us.

"The NMS Service terminated unexpectedly." is recorded in the system event log:

→ Although the following log may be recorded in the system event log when starting the system, or after exchanging PCI modules, there is no real problem on operation. Change of a setup with PROSet II will become invalid if NMS service stops, but you can change a setup normally because NMS service will be automatically started when PROSet II is started.

"Source: Service Control Manager
Event ID: 7031
Description: The NMS service terminated unexpectedly. This has occurred 1 time(s). The following corrective action will be taken in 0 milliseconds: No action."

iANSMiniport-related logs are recorded in the system event log:

→ The logs of the source “iANSMiniport” are the logs about the duplex of the network. The following logs may be recorded in the system event log when starting the system (In the description, “X” represents a number).

“Source: iANSMiniport
Event ID: 11
Description: Adapter link down: Stratus emb-82544GC Copper Gigabit Adapter.”

“Source: iANSMiniport
Event ID: 11
Description: Adapter link down: Stratus emb-82544GC Copper Gigabit Adapter #2.”

“Source: iANSMiniport
Event ID: 13
Description: Secondary Adapter is deactivated from the Team: Stratus emb-82544GC Copper Gigabit Adapter #2.”

“Source: iANSMiniport

Event ID: 16
Description: Team #X: The last adapter has lost link. Network connection has been lost."

"Source: iANSMiniport
Event ID: 35
Description: Initializing Team #X missing adapters. Check the configuration to verify that all the adapters are present and functioning."

If the following logs are recorded after the above logs are recorded, there is no real problem on operation by the above errors or warnings. When the following logs are not recorded, if the log of the source "sragbe" is not recorded, there is no real problem on operation by the above errors or warnings.

"Source: iANSMiniport
Event ID: 14
Description: Secondary Adapter has rejoined the Team: Stratus emb-82544GC Copper Gigabit Adapter."

"Source: iANSMiniport
Event ID: 15
Description: Adapter link up: Stratus emb-82544GC Copper Gigabit Adapter."

"Source: iANSMiniport
Event ID: 17
Description: Team #X: An adapter has re-established link. Network connection has been restored."

ESMCpuPerf-related logs are recorded in the system event log:

→ If NEC ESMPRO Agent cannot get performance information from the OS due to a temporary resource shortage or high load ratio on the system, it will record the following event log. However, there is no real problem on operation (In the description, Y and X represent alphanumeric characters).

Source: ESMCpuPerf
Event ID: 9005
Description: Cannot get system performance information now (YYYY Code=xxxx).

If NEC ESMPRO Agent cannot get information, it will treat the load ratio as 0%. So, if NEC ESMPRO Agent cannot get information continuously, the CPU load ratio may appear lower than the actual value.

Failure in CPU module duplication and the following event is logged:

→ If the simultaneous replacement of the CPU and PCI modules causes the CPU and PCI modules to control duplication, the CPU module duplication may fail with the following message saved in the system event log. If so, the system can be recovered from the failure starting the CPU module with ft server utility or by reinserting the CPU module.

Source: srabid
ID: 16474
Description: Diagnostics failure of 2: 'CPU Get Chipset Info' (0xf026,0x0,0x0).

EvntAgnt-related logs are recorded in the application event log:

→ The event does not affect the system (it also does not affect the SNMP service). You need not to cope with this event.

Source: EvntAgnt
ID: 1003
Description: TraceFileName parameter not located in registry;
Default trace file used is.

Source: EvntAgnt
ID: 1015
Description: TraceLevel parameter not located in registry;
Default trace level used is 32.

sra_ssn-related logs are recorded in the application event log:

→ Although the following log may be recorded in the application event log when starting the system, there is no real problem on operation. (In the description, X represent alphanumeric characters.)

Source: sra_ssn
ID: 10319
Description: Authorization failed to ftSAA XXX.XXX.X.X
Error=0xXXXXXXXX.

Source: sra_ssn
ID: 10336
Description: Retry starting for ftSAA XXX.XXX.X.X host log connection.

Source: sra_ssn
ID: 10320
Description: Add Host Log entry failed to ftSAA SMMX.

Source: sra_ssn
ID: 10338
Description: Retry starting for RPC server initialization.

"Stratus Fault Tolerant Virtual 69000 Video" is displayed on "Remove Hardware" dialog box:

→ If you double-click an icon "Remove Hardware" on the system tray, two "Stratus Fault Tolerant Virtual 69000 Videos" will appear. Do not remove them. Otherwise, the connected PCI modules will be disconnected forcefully and the system may operate normally.

Machine repeats rebooting at startup:

❑ Is CHKDSK executed at machine startup?

→ Open the utility of the BIOS setup at rebooting and change the following settings:

(Change BIOS settings)

Change [Stratus] - [Monitoring Configuration] - [Boot Monitoring] to [Disabled]. (For details, see Chapter 4.)

* After completion of CHKDSK, restart the machine and change the above setting back to [Enabled] and continue the operation.

CHKDSK is executed in the following conditions:

(1) CHKDSK is scheduled to be executed at next system startup

(2) Corruption of file system is detected since the previous startup until shutdown

(3) Inconsistency (corruption) of file system is detected while mouting at system startup

❑ Is the value of [Boot Monitoring Time-out Period] in the BIOS setting appropriate?

→ Change the value of [Boot Monitoring Time-out Period] to suit your environment. (For details, see Chapter 4.)

Mouse does not move smoothly, and drawing graphics takes time:

❑ Is the hardware acceleration set to Full?

→ Set it to "None".

Make sure to set the hardware acceleration to None in NEC Express5800/ft series (Default: None).

(How to check and change the hardware acceleration setting)

Select the [Start] - [Control Panel] - [Display] – [Settings] tab – [Advanced]. "Plug&Play Monitor and Stratus Virtual Video Properties" is displayed. Select the [Troubleshoot] tab and check the hardware acceleration setting.

CPU load ratio of SNMP Service (snmp.exe) increases:

→ While monitoring the server from NEC ESMPRO Manager, the CPU load ratio of SNMP Service on the NEC ESMPRO Agent side may increase at every monitoring interval (default: 1 minute).

NEC ESMPRO Manager and NEC ESMPRO Agent exchange information through SNMP Service.
If the server status monitoring by NEC ESMPRO Manager is on (default: ON), NEC ESMPRO Manager regularly issues a request to NEC ESMPRO Agent to get the current status of the server. In response, NEC ESMPRO Agent checks the status of the server. As a result, the CPU load ratio of SNMP Service increases temporarily.
If you have trouble of terminating a movie player application, turn off the server status monitoring by NEC ESMPRO Manager or extend the monitoring interval.

Hang of SNMP Service occurs:

→ SNMP Service has a module called "SNMP Extended Agent." This module may be registered when you install some software that uses SNMP Service.

If you start SNMP Service, SNMP Extended Agent is also loaded at the initialization. However, if the initialization is not completed within a specified period, SNMP Service will hang.
It may take time to complete the initialization due to temporary high load on the system. In this case, wait for the system load become low enough before restarting SNMP Service.

CPU/PCI module cannot be mounted:

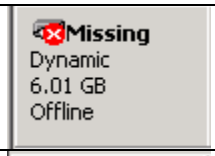
→ When a failure occurs to a component and you remount it, the system event log may record the message below and the remounting process may be stopped.
In such case, the component's MTBF became below the threshold, and the system judged that the component needs to be repaired and thus the component cannot be remounted.

Usually, the module requires a replacement. Contact your sales agent.
If you remount the module without taking any action for some reason, you may forcefully remount it after consulting your sales agent.

Source : srabid
ID : 16395
Description : x is now STATE_BROKEN / REASON_BELLOW_MTBF
("x" is a device number.)

Disk Management displays disks that cannot be used:

→ Follow the instruction below:

Disk status	Description	Action
	When a dynamic disk which had been used for a different system is mounted, the disk is indicated as [Foreign].	**[To use the data on the disk]** Refer to Chapter 3 " Windows Setup and Operation" and import the disk. **[To make the disk usable]** The disk needs to be initialized in order to use it. By performing initialization steps, the disk will become available. **<Caution>** Initializing the disk will erase all data on the disk. Back up important data, if any, before initialization.
	When a dynamic disk is damaged or removed, the disk is indicated as [Missing].	If there are volumes on the missing disk, release the mirror on the disk. When the mirror is broken, right-click the [Missing] disk and perform [Remove disk].
	When a disk is not signed, the disk is indicated as [Not Initialized].	Right-click the disk and perform [Initialize Disk]. The disk will become usable.

The primary PCI module's status LED2 and DISK ACCESS LED illuminate amber after startup:

❑ Is the mirror of the hard disks broken?

→ See [Disk Management]. If the mirror is broken, reconfigure the mirror.
For mirror configuration, see "DISK OPERATIONS" in Chapter 3 "Windows Setup and Operation".
Other than disk failures, the following operations may break the mirror at startup.

- The PCI module shut down in simplex mode (not-duplicated) and restarted.
- NEC Express5800/ft series was started while the BMC status LED was illuminating amber.

BMC (Baseboard Management Controller) is duplicated immediately after the AC power becomes on or a PCI module is loaded. If you press the power button before starting the duplication process or during the process, the mirror of the disks may be broken. You should start NEC Express5800/ft series after BMC duplication process is completed.
To determine whether the duplication is completed, see the BMC status LED of the mounted PCI module:

- Red: not duplicated
- Amber: being duplicated
- Green: duplicated

For details of BMC status LEDs, see "LEDs" in Chapter 2 "General Description".

Memory dump (debug information) cannot be collected at a failure occurrence:

- ❑ Is there enough space at memory dump (debug information) storage location?

  → For a memory dump (debug information) storage destination, specify a drive with available capacity equal to or greater than the memory size which 12MB is added to the one installed on this server (2048 + 12MB or greater for a memory size larger than 2GB).
  For more information, see “Set memory Dump (Debug Information)” under “Step 12: Set up Failure Management” of Chapter 4 “Windows Setup” in the separate volume “User’s Guide (Setup)”.

- ❑ Is the initial size of the OS partition’s paging file set to a value smaller than the recommended value?

  → When the specified initial size of the paging file is below the recommended value, accurate memory dump (debug information) may not be collected.
  You must specify a size larger than the recommended value.
  For more information, see “Set Memory Dump (Debug Information)” under “Step 12: Set up Failure Management” of Chapter 4 “Windows Setup” in the separate volume “User’s Guide (Setup)”.

Problems with NEC EXPRESSBUILDER

When the server is not booted from the NEC EXPRESSBUILDER CD-ROM, check the following:

❑ Did you set the NEC EXPRESSBUILDER CD-ROM during POST and restart the server?

→ If you do not set the NEC EXPRESSBUILDER CD-ROM during POST and restart the server, an error message will appear or the OS will boot.

❑ Is BIOS configuration correct?

→ The boot device order may be specified with the BIOS setup utility of the server. Use the BIOS setup utility to change the boot device order to boot the system from the CD-ROM drive first.

<Menu to check: [Boot]>

When an error occurs while the NEC EXPRESSBUILDER is in progress, the following message appears. After this message appears, check the error and take the appropriate corrective action according to the error codes listed in the table below.

Message	Cause and Remedy
This machine is not supported.	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
NvRAM access error	An access to the nonvolatile memory (NvRAM) is not acceptable.
Hard disk access error	The hard disk is not connected or it is failed. Check whether the hard disk is correctly connected.

An error message will also be displayed when an error was detected during system diagnosis. Take a note or print the error message displayed, and contact your sales agent.

Problems with Master Control Menu

Failed to read online documentation

❑ Is Adobe Acrobat Reader installed properly?

→ A part of online documentation is supplied in PDF file format. Install the Adobe Acrobat Reader (Version 4.05 or later) in your operating system. You can also install the Adobe Acrobat Reader using the NEC EXPRESSBUILDER CD-ROM. Launch the Master Control Menu and select [Setup] → [Adobe Acrobat Reader].

Image of online documentation is not clear

❑ Is your display unit set to display 256 colors or more?

→ Set the display unit to display 256 colors or more.

The master control menu fails to appear:

❑ Is your system Windows NT 4.0 or later, or Windows 95 or later?

→ The CD-ROM Autorun feature is supported by Windows NT 4.0 and Windows 95. The older versions do not automatically start from the CD-ROM.

❑ Is **Shift** pressed?

→ Setting the CD-ROM with **Shift** pressed down cancels the Autorun feature.

❑ Is the system in the proper state?

→ The menu may not appear depending on the system registry setting or the timing to set the CD-ROM. In such a case, start the Internet Explorer and run \MC\1ST.EXE in the CD-ROM.

Problems with NEC ESMPRO

NEC ESMPRO Manager

→ See Chapter 5. See also online document in NEC EXPRESSBUILDER CD-ROM for troubleshooting and other supplementary information.

NEC ESMPRO Agent

NEC ESMPRO Manager cannot receive trap from NEC ESMPRO Agent:

→ To change the community name of traps to be received from the default "public" in the NEC ESMPRO Manager site, enter the same name as the community name newly set in the NEC ESMPRO Manager site.

To receive trap from NEC ESMPRO Agent at the NEC ESMPRO Manager machine, both community names should be the same.

NEC ESMPRO Manager report alert from NEC ESMPRO Agent doubly:

→ If the IP address (or host name) of the remote NEC ESMPRO Manager specified as the trap send destination in the setup of the manager report (TCP/IP), the message warning the duplication appears. The specification of the same NEC ESMPRO Manager causes to be reported doubly.

NEC ESMPRO Manager cannot monitor NEC ESMPRO Agent:

→ If you entered any community name other than "public" in the [Community name] box in the [Traps] property sheet, add that name to "Accepted community names" refer to the users guide (setup) of a separate volume.

→ Unless you set the acceptable community's authority to "READ CREATE" or "READ WRITE," you cannot perform monitoring from NEC ESMPRO Manager.

NEC ESMPRO Agent cannot receive SNMP packets sent from NEC ESMPRO Manager:

→ If the community name is changed, the community of NEC ESMPRO Agent is changed and registered by starting from [Control Panel]. Change registration in the following steps.

1. Double-click the [NEC ESMPRO Agent] icon in [Control Panel].
2. Select a desired community name from the [SNMP Community] list box in [SNMP Setting] of the [General] sheet.

   The community names to receive SNMP packets from are listed in the [SNMP Community] list box.

3. Click [OK] to terminate the operation.

   To allow NEC ESMPRO Agent to receive SNMP packets sent from NEC ESMPRO Manager, set the send community name in NEC ESMPRO Manager to be the same as that accepted by the SNMP Service in NEC ESMPRO Agent.

NEC ESMPRO Agent cannot perform correctly:

→ If the SNMP Service is added after adaptation of the service pack in installation of OS, adapt the service pack again. If not, the SNMP Service may not operate correctly. This then disables NEC ESMPRO Agent to be operated.

→ The SNMP Service is required for operating NEC ESMPRO Agent.

If the SNMP Service is deleted after the installation of NEC ESMPRO Agent, install the SNMP Service and then reinstall NEC ESMPRO Agent.

→ Some software products provided by other vendors use the SNMP Service.

If the SNMP Service and NEC ESMPRO Agent are installed in the system in which such software as above is installed, it may be impossible to start NEC ESMPRO Agent services. If so, delete the SNMP Service once and install the service again. After which, reinstall NEC ESMPRO Agent and the other vendor's software.

Total Status of the PCI Module

→ When each module’s status is simplex, the total status of the PCI module displayed on the Data Viewer is yellow (warning) and the status will be reflected to the server status. The ft control software 3.0 or later does not display the information on Ethernet or SCSI adapter on the tree of the Data Viewer. If an error occurs on an Ethernet or SCSI adapter, view the alert reports.

Unknown or incorrect information appears in CPU information:

→ If you select [CPU Module]-[CPU] in the FTServer tree of the data viewer, unknown or incorrect information appears in some information items.

The CPU information can be viewed by selecting [System]-[CPU] in the [ESMPRO] tree.

The message prompting you to reconstruct the tree of the data viewer will appear:

→ If you dynamically change the configuration of the CPU or PCI module in the relevant system during review of the server information by using the data viewer, the message prompting you to reconstruct the tree of the data viewer will appear. If you click the [Yes] button, the tree is reconstructed in the data viewer to reflect the change of the system configuration on the data viewer.

Clicking the [No] button does not cause the tree to be reconstructed in the data viewer. If so, the information in the data viewer may be different from the current system information because the change of the system configuration is not reflected on the data viewer.

The incorrect information is displayed on SCSI slot information:

→ When the PCI module is detached and you select [SCSI Slot]-[General], the displayed "Hardware LED" information may not be correct. To check the status of SCSI slots, see the string information in the "Status" column.

The LAN monitoring function report a line fault or high line load:

→ The LAN monitoring function defines the line status depending on the number of transmission packets and the number of packet errors within a certain period. Thus, the LAN monitoring function may report a line fault or high line load only in a temporary high line impedance state. If a normal state recovery is reported immediately, temporal high line impedance may have occurred thus there is not any problem.

LAN monitoring threshold is not used:

→ Because the NEC Express5800/ft series detects hardware faults on the network in the driver level, NEC ESMPRO Agent does not monitor line faults.

Thus, the value set for "Line fault occurrence rate" of a [LAN] tab of [NEC ESMPRO Agent properties] in the control panel is not used.

The remote shutdown and threshold change functions cannot be used via NEC ESMPRO Manager:

→ Depending on your OS type or its version, settings for community, SNMP service's security function, are not made, or default settings of authority are different.

To enable the remote shutdown and threshold change functions via NEC ESMPRO Manager, make settings of community and set its authority to "READ CREATE" or "READ WRITE."

NEC ESMPRO Manager cannot monitor in Sleep State:

→ NEC ESMPRO Manager cannot monitor the NEC ESMPRO Agent machine in the sleep state (system standby or system halt state).

While NEC ESMPRO Manager monitors server shutdown, the relevant NEC ESMPRO Agent machine may be entered into the sleep state. If so, the report "server access disabled" is issued and the status color of the server icon becomes gray.

This cannot indicate whether the NEC ESMPRO Agent machine is shut down or entered into the sleep state. Keep these in mind when operating the system where systems to be monitored may enter the sleep state.

Some items cannot be monitored with NEC ESMPRO Manager:

→ Some items cannot be monitored with NEC ESMPRO Manager of version 4.0 or earlier.

NEC ESMPRO Manager Ver.4.1 is registered in NEC EXPRESSBUILDER CD-ROM. Use the NEC ESMPRO Manager Ver.4.1.

The incorrect information appears on the printer information's available time:

→ When you add a new printer, install its driver and make its settings, if you do not make settings for the available time from Add Printer Wizard, the printer's available time (From and To) in [Printers and Faxes] are [00:00], on the other hand, Manager's time are [9:00]. To display them properly, make the settings of printer from [Printers and Faxes].

The procedures are as follows:

1. Start [Printers and Faxes], and open the printer properties you want to make settings for. (Select the [Printers and Faxes], right-click and select [Properties].)
2. Select the [Advanced] tab.
3. Enter values in the available time (From and To), and click [OK] in the [Advanced] and [Properties] dialog boxes.

Now, you can see the correct information from Manager, too.

Disk Maintenance While NEC ESMPRO Agent is Running:

→ The following works to disks (hard disk drive or magneto optical) are not allowed while NEC ESMPRO Agent is running;

- To format or delete a partition by Disk Administrator or by other means.
- To request programmatically to remove media from removable disks such as MO, Zip and PD.

1. Select the [Start] - [Settings] - [Control Panel].
2. Open the [Service].
3. Select a service named "ESMCommonService", and click the [Stop].
4. Confirm that "ESMCommonService" stopped, and close the [Service].
5. Do the disk-related works.
6. Open the [Service] again, select "ESMCommonService" and click the [Start].

7. Confirm that "ESMCommonService" is active and close the [Service] and [Control Panel].

Change the threshold of temperature, voltage and fan sensors:

→ From NEC ESMPRO Agent, the display / the change of the threshold of temperature, voltage, fan cannot be performed. However, there are some which can perform only the display of a threshold in the data viewer of NEC ESMPRO Manager depending on a model. NEC ESMPRO Agent is supervising by the optimal threshold set up from each model.

The incorrect information appears on Current Status of Temperature, Voltage and Fan Sensors:

→ The temperature / voltage / fan sensor which does not have information, such as a state, the present value, number of rotations, and a threshold, depending on a model exist. Therefore, keep in mind when an applicable sensor is referred to by NEC ESMPRO Manager, displayed as follows.

- A state is displayed to be "unknown" on a data viewer (indicated by gray).
- The present value and number of rotations are displayed to be "unknown" on a data viewer.
- A state is displayed in grey on the data viewer of a Web component.
- Nothing is displayed about the present value or number of rotations on the data viewer of a Web component.

Even if displayed as mentioned above, monitoring is performed and there is no problem.

Monitoring of shutdown:

→ When monitoring shutdown, all shutdown processing serves as the candidate for monitoring. If there is application which uses a shutdown which is not accompanied by reboot of OS or power supply OFF, set up the timeout-time for a long time, or turn OFF monitoring.

The external clock of CPU information is listed as "Unknown":

→ In [CPU Information] of Data Viewer’s system tree, the external clock is listed as "Unknown."

[ft Server] Tree Appears on Date Viewer in an Incorrect Manner:

→ If you open a Data Viewer immediately after the system starts up, the tree or the state of a Data Viewer may not be displayed correctly due to high load of the system. In about 20 minutes after the system startup, when a pop-up message (below) which prompts you to reconstruct a Data Viewer appears, click [OK]. The Data Viewer will be reconstructed and the tree and the status will be displayed correctly.

Data Viewer

The system configuration of the host may have been changed. Do you wish to reconstruct the tree?

The incorrect information appears on floppy disk drive:

→ After unplugging and plugging the PCI module of the primary side, the floppy disk drive name of [I/O Device] on Data Viewer may be different from the name that is recognized by the OS.

(Example: drive name on Data Viewer: "A", drive name recognized by the OS: "B")

Check the floppy disk drive name on Explorer.

→ If you add or delete floppy disk drive connected with USB while the system is running, the drive information under the [I/O Device] in the data viewer will be updated at the next system startup.

The displayed BIOS data is incorrect:

→ BIOS additional data may not be displayed properly in [BIOS Information] of a CPU Module of the ft server utility or in [Ft Server]-[CPU Module]-[Individual CPU Module]-[General]-[BIOS Information] of Data Viewer.

In this case, see the data in [ESMMIB]-[BIOS] of Data Viewer.

The displayed status of Ethernet adapter is error:

→ If an Ethernet adapter is not used (not connected to cable), set it to "Disable" in [Network Connections] from Control Panel. If an Ethernet adapter you are about to disable has dual LAN settings (AFT function), remove the dual LAN settings before disable it.

NEC ESMPRO Agent cannot perform correctly by coexistence with the Oracle products:

→ The installation of the Oracle products may change Startup Type of SNMP Service into "Manual". If so, change the setting back to "Automatic" and set up correctly according to the description of the Oracle product.

A modular state is displayed as "fault":

→ PCI modules, SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. For example, when the “Status” item of a module changes to “fault,” it may be caused by another module’s error. Therefore, you need to check the status of the other modules based on alert information.

After mounting a hard disk, a status color changes frequently:

→ When creating a new mirror, the status of the hard disk and its upper component, SCSI enclosure, will continue to change frequently after you mount a hard disk until the mirror is completed. During this process, the status color may turn to abnormal, but when the mirror is created successfully, it will return normal.

Diagnostic of the CPU modules:

→ While diagnosing a stopped CPU module, the CPU is no longer in the duplex mode and the CPU and the memory cannot be used. However, the status of [CPU] and [DIMM] displayed under [CPU module] in the FTServer tree on a Data Viewer becomes “Online” and the status color becomes green.

New settings in thresholds of monitoring interval and free space monitoring are not reflected:

→ New settings in thresholds of monitoring interval and free space monitoring are not reflected immediately after they are changed. They are reflected at the next monitoring interval of monitoring service.

Fault time of a SCSI slot is not displayed correctly:

→ In the NEC Express5800/ft series with ft control software 3.0, “Time of last fault” in [Maintenance] under [SCSI slot] on a Data Viewer is not supported. Therefore the time will not be displayed correctly.

The mirroring status of a hard disk drive mirrored by the Rapid Disk Resync function is not displayed correctly:

→ The Data Viewer’s [Mirror Disk] tree of [FTServer] shows a pair of hard disk drives constructing mirroring as one mirror.

Therefore the status of a volume (such as span volume and striping volume) over multiple hard disk drives created by the RDR function may not be displayed correctly. Use the RDR Utility for checking the state of mirrored hard disk drives created by the RDR function.

The information on the hard disk drive in the Disk Expansion Unit is not displayed correctly.

→ When the Disk Expansion Unit is mounted, the information on the hard disk drive in the Disk Expansion Unit may not be displayed on the [SCSI Enclosure] – [SCSI Slot] information on a Data Viewer. In such case, reboot the system.

COLLECTION OF TROUBLE LOGS

In the event of trouble, you can get information in the procedures described below:

IMPORTANT:

- You can perform the procedures described below only when you are asked by your maintenance personnel to get trouble logs.
- When the system restarts after the trouble, it may show a message that there is a shortage of virtual memory. However, continue the system startup. If you reset and restart the system, you cannot get correct information.

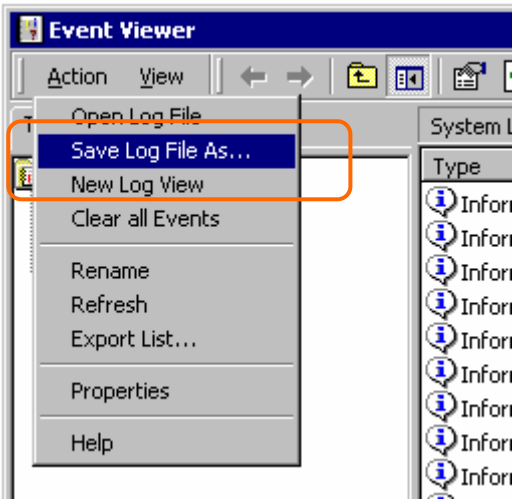
Collection of Event Logs

Collect the logs of various events that have occurred in the NEC Express5800/ft series.

IMPORTANT: If a STOP error or system error has occurred or the system has stalled, restart the system, and then start collecting event logs.

1. Click [Start] → [Settings] → [Control Panel] → [Administrative Tools] → [Event Viewer].
2. Select the type of the log to be collected.

   [Application Log] contains events related to the applications that were active at occurrence of the events. [Security Log] contains security-related events. [System Log] contains events that occurred in system components of Windows Server 2003, Enterprise Edition.
3. Click [Save Log File As...] in the [Action] menu.



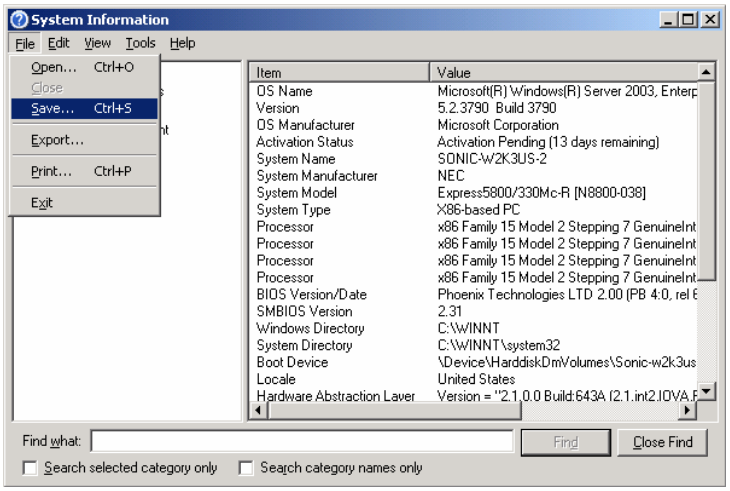
4. Enter the name of the target archive log file in the [File name] box.
5. Select the format of the target log file from the [Save as type] list box, and click [OK].

Collection of Configuration Information

Collect information such as the hardware configuration and internal setting information of the NEC Express5800/ft series.

IMPORTANT: If a STOP error or system error has occurred or the system has stalled, restart the system, and then start the work.

1. Click [Start] → [All Programs] → [Accessories] → [System Tools] → [System Information].
2. Select the [Save…] from the File menu.



3. Enter the name of the target file in the [File name] box.
4. Click [Save].

Collection of Diagnostic Information by Dr. Watson

Collect diagnostic information related to application errors by using Dr. Watson.

You can designate any destination to save diagnostic information.

For details, see help information. Click [Start] → [Run...], execute "drwtsn32.exe," and click [Help] in the [Dr. Watson for Windows] dialog box.

COLLECTION OF THE MEMORY DUMP

If a failure occurs, the memory data should be dumped to acquire the required information. If you stored the dump data in a DAT, label it so as to indicate the software (e.g. NTBackup) you used for storing it. You may save the diagnosis data to a desired destination.

IMPORTANT:

- Consult with your sales agent before dumping the memory. Executing memory dumping while the server is in the normal operation may affect the system operation.
- Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system again may result in dumping improper data.

Preparing for Memory Dump

Memory dumping with the DUMP switch may disable the server to restart. In such a case, it is required to force the server to shut down. This forced shutdown, however, is not available if "Masked" is selected for "Power Switch Mask" on the Security menu of the BIOS setup utility, SETUP, because this setting disables POWER switch operation.

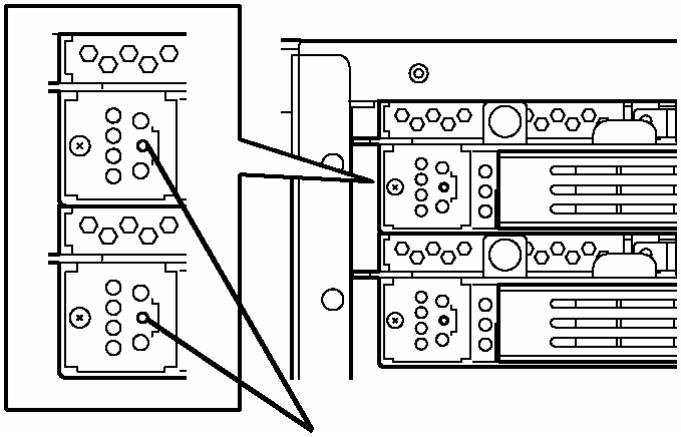
Follow the procedure below to change the setting to enable the forced shutdown and restart of the server.

1. Power on the server and start the BIOS setup utility, SETUP.
2. Select "Unmasked" for "Power Switch Mask" in the Security menu.
3. Save the configuration data and exit the SETUP.

Saving Dump Files

Press the DUMP switch to save the dump file when an error occurs. Insert a metal pin (a straightened large paper clip will make a substitute) into the switch hole to press the DUMP switch.

Pressing the DUMP switch saves the dump file in the specified directory. (Memory dumping may not be available when the CPU stalls.)



Dump switches

IMPORTANT: Do not use a toothpick or plastic stick that is easy to break.

(This page is intentionally left blank.)

Chapter 8

Option

This chapter describes option devices available and procedures to add options and replace failed components.

IMPORTANT:

- Optional devices described in this chapter may be installed or removed by the user. However, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user. NEC recommends you ask your sales agent to install or remove any optional devices.
- Be sure to use only optional devices and cables designated by NEC. Repair of the server due to malfunctions, failures, or damage resulted from installing such devices or cables will be charged.

SAFETY PRECAUTIONS

Observe the following notes to install or remove optional devices safely and properly.

⚠ WARNING



Observe the following instructions to use the server safely. There are risks of death or serious personal injury. See “PRECAUTIONS FOR SAFETY” in Chapter 1 for details.

- Do not disassemble, repair, or alter the server.
- Do not look into the CD-ROM drive.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

⚠ CAUTION



Observe the following instructions to use the server safely. There are risks of fire, personal injury, or property damage. See “PRECAUTIONS FOR SAFETY” in Chapter 1 for details.

- Do not install or remove the CPU module by a single person.
- Do not install the server leaving the cover removed.
- Make sure to complete component installation.
- Do not pinch your finger(s).
- High temperature

ANTI-STATIC MEASURES

The server contains electronic components sensitive to static electricity. Avoid failures caused by static electricity when installing or removing any optional devices.

- Wear wrist straps (arm belts or anti-static gloves).

  Wear wrist straps on your wrists. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body.

  Touch the metal part regularly when working with components to discharge static electricity.

- Select a suitable workspace.
  - Work with the server on the anti-static or concrete floor.
  - When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.
- Use a worktable.

  Place the server on an anti-static mat to work with it.

- Clothes
  - Do not wear a wool or synthetic cloth to work with the server.
  - Wear anti-static shoes to work with the server.
  - Take off any metal accessories you wear (ring, bracelet, or wristwatch) before working with the server.
- Handling of components
  - Keep any component in an anti-static bag until you actually install it to the server.
  - Hold a component by its edge to avoid touching any terminals or parts.
  - To store or carry any component, place it in an anti-static bag.

PREPARING YOUR SYSTEM FOR UPGRADE

Note the followings, when installing or replacing devices, to improve the performance of NEC Express5800/ft series.

- With the NEC Express5800/ft series, devices can be replaced during the continuous operation. Take extreme care for electric shock and damage to the component due to short-circuit.
- Optional devices cannot be installed or removed during continuous operation. Normally, shutdown Windows Server 2003, Enterprise Edition, check that the server is powered off, disconnect all power cords and interface cables from the server before installing or removing the optional devices.
- To remove the CPU or PCI module during the continuous operation, disable the intended module (place the module off-line) by using the ft server utility of the NEC ESMPRO Agent or the NEC ESMPRO Manager from the management PC on the network. After a new module is installed to the server, enable the module using the ft server utility or the NEC ESMPRO Manager.

  TIPS: The system is defaulted to automatically boot the module, once installed. For more information, see Chapter 5.

- Make sure to provide the same hardware configuration on both groups.
- Use the same slots and sockets on both groups.
- Do not install those devices having different specifications, performance, or features.
- Before removing the setscrews from the CPU and PCI modules, place the desired module off-line using the ft server utility or the NEC ESMPRO Manager.

OPTIONS

The following table lists options available for NEC Express5800/ft series.

Any other options not described in this table are maintenance parts or the one supported by customer's request. Ask your service representative for details.

There are two types of options. For CRU (Customer Replaceable Unit), the customer can work with it. For FRU (Field Replaceable Unit), only our field engineer can work with. For FRU options, ask your service representative for installation or removal procedure.

IMPORTANT: Make sure to add options in pair to configure the duplex system. Moreover, for components to be installed in a module, it is necessary to install the same components in the same slots (socket) in the module.

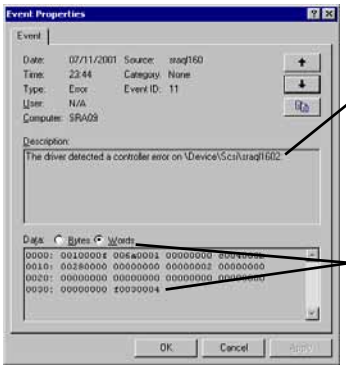
Option		Classification		Add/ Replace	Description
		CRU	FRU		
PCI module		×	√	Replace	Two PCI modules are factory-installed in NEC Express5800/ft series.
	Hard disk drive	√	×	Add/ Replace	A PCI module can contain three hard disk drives. One drive is factory-installed. See "3.5-inch Hard Disk Drive" in this chapter for details.
	PCI board	×	√	Add/ Replace	A PCI module can contain three PCI boards. A factory-installed SMM board is FRU. For setup of PCI board, see "Setup of Optional PCI Board" in this chapter.
CPU module		×	√	Replace	Two PCI modules are factory-installed in NEC Express5800/ft series.
	DIMM (memory)	×	√	Add/ Replace	A CPU module can contain 12 DIMMs (12GB). Four 512MB DIMMs are factory-installed. Install four DIMMs in group.
	Processor (CPU)	×	√	Add/ Replace	A CPU module can contain four CPUs. Two CPUs are factory-installed.
Expansion PCI module		×	√	Replace	Two expansion PCI modules are factory-installed in NEC Express5800/ft series.
	PCI board	×	√	Add/ Replace	An expansion PCI module can contain three PCI boards. For setup of PCI board, see "Setup of Optional PCI Board" in this chapter.

3.5-INCH HARD DISK DRIVE

The 3.5-inch hard disk drive bay in front of the server contains six slots in which hard disks with the SCA2 interface are installed.

IMPORTANT:

- You may conduct the installation, removal and replacement of hard disk drive by yourself. However, if you are not familiar with procedures, NEC recommends that you request a maintenance engineer of your service representative having the expert knowledge on the server to do the installation and removal procedures.
- Do not use any hard disk drives that are not authorized by NEC. Installing a third-party hard disk drive may cause a failure of the server as well as the hard disk drive. Purchase the hard disks of the same model in pair. Contact your service representative for hard disk drives optimum for your server.
- The OS starts from the hard disk that is mounted in Slot 1 of the primary module (whose POWER LED is on).
- When the PCI module operates in simplex mode (not in duplex mode), the mirroring feature of the hard disk drive may be disabled at OS shutdown. OS will fail to start at rebooting the server because the mirroring is disabled at the PCI module being offline (see Chapter 7). Boot the server from the hard disk drive in PCI module that was in online state at the OS shutdown.
- A SCSI controller error having sraql160 as its source may sometimes be recorded in the system event log. This error is likely to be issued when the hard disk drive processing cannot keep up in time with requests of the OS, but the processing is carried on normally thanks to the retry function. So, this does not affect the operation at all. In case such an error is issued, check the detailed data indicated below, and if it is "f0030004" or "f0030015," just ignore that log.
  If, however, a SCSI controller error whose detailed data is "f0030004" or "f0030015" is recorded repeatedly (ten times or more in a week time as a rough guide), a hard disk drive failure is suspected. Contact the maintenance personnel in such a case.



Description:
The driver detected a controller error on \Device\Scsi\sraql160x
[x is a numeral as 1 or 2 for example.]

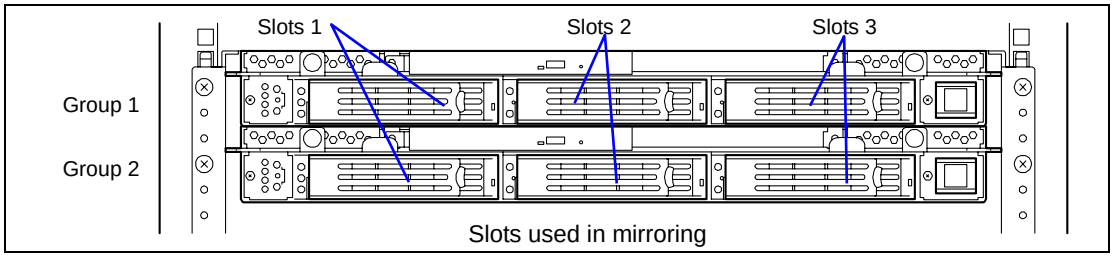
In the case where the detailed data of the above event properties is represented in words, the error represents no trouble if the value from 0034: is “f0030004" or “f0030015".

NOTES:

- POWER LED is on to indicate that it is the primary module.
- The module that you plug in first will be the primary module.

You can install hard disks, each of which is about 25.4 mm (1 inch) in thickness, to the three slots of each PCI module. Each slot has a label describing the slot number.

Disks of the same slot number are mirrored between the groups. The figure below shows the groups and mirroring slots.



Empty slots in the 3.5-inch hard disk drive bay contain dummy trays. The dummy trays are inserted to improve the cooling effect within the device. Always insert the dummy trays in the slots in which hard disks are not installed.

Attach an ID label indicating the slot number of installed hard disk to the handle of the hard disk.

IMPORTANT: The ID label can be used repeatedly several times. Keep the ID label for future use.

Installing 3.5-inch Hard Disk Drive

Follow the procedure below to install the hard disk. A hard disk may be installed in another slot in the same procedure.

IMPORTANT: Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.

1. Click [Start] → [Administrative Tools] → [Computer Management].

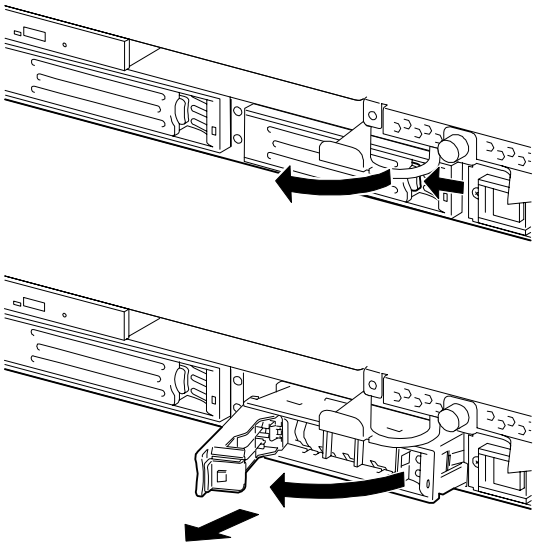
   The [Computer Management] window appears.

2. Click [Disk Management] under [Storage] in the console tree.
3. Remove the front bezel.
4. Identify the slot to which you want to install the hard disk.

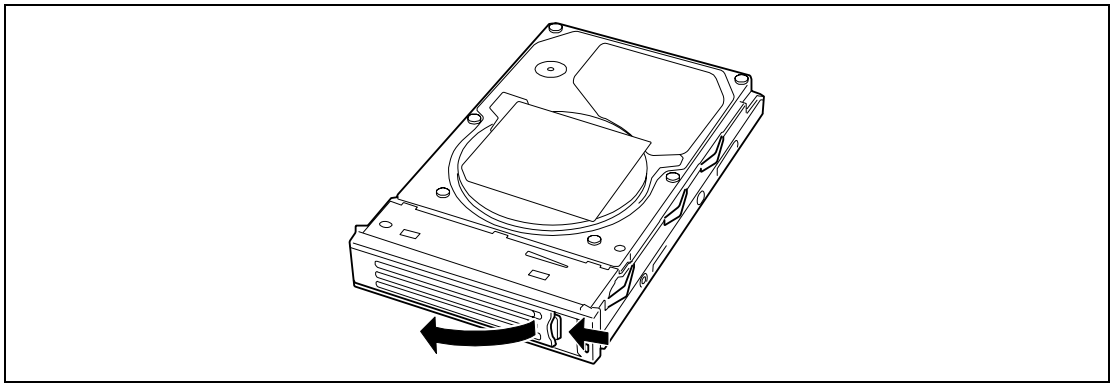
   Install a hard disk in an empty slot in the group, starting from the left slot.

5. Unlock the lever of the dummy trays and remove those trays by pulling the handles (the handles need to be brought forward to be pulled).

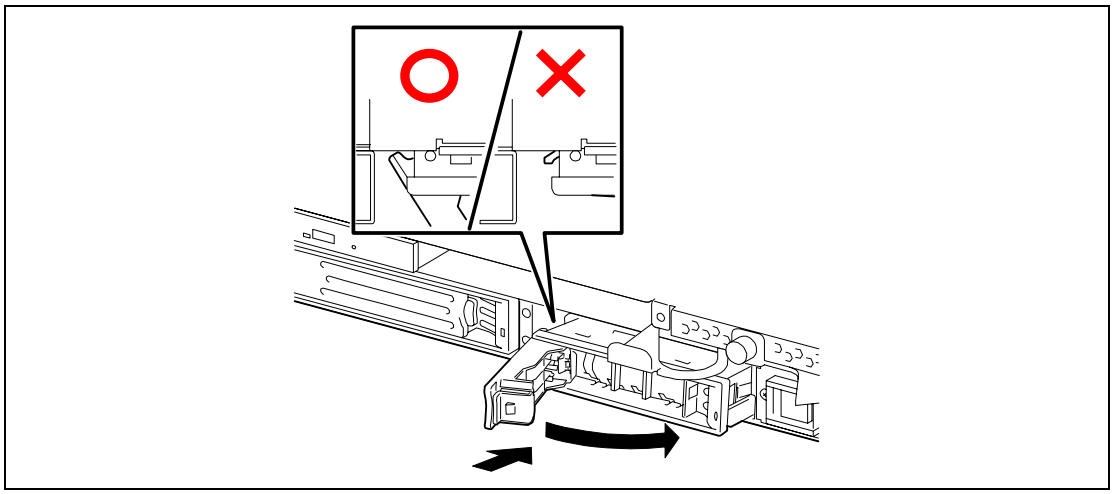
   IMPORTANT: Carefully keep the removed dummy tray.



6. Unlock the hard disk drive to be added.



7. Firmly hold the handle of the hard disk to install and insert the hard disk into the slot.



NOTES:

- Engage the upper and lower frames of the tray with the left and right grooves on the 3.5-inch hard disk drive bay and insert the hard disk.
- Insert the disk until the lever hook touches the server frame.
- Check the orientation of lever. Insert the hard disk with the lever unlocked.

8. Slowly close the lever.

When the lever is locked, you will hear a click sound.

IMPORTANT: Be careful not to pinch your finger(s) between the lever and handle.

NOTE: Check the hook of the lever is engaged with the frame.

9. Attach the front bezel after installing all the hard disks.

10. Set the dual disk configuration (see Chapter 3).

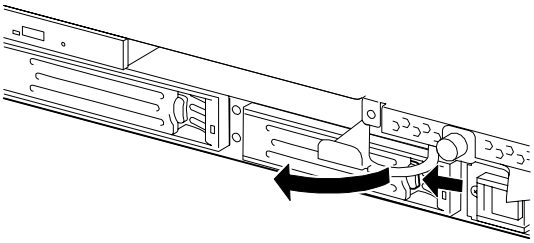
Removing 3.5-inch Hard Disk Drive

Follow the procedure below to remove the hard disk.

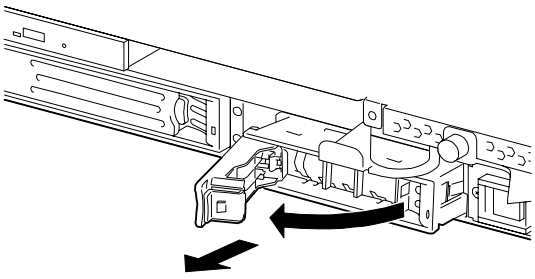
IMPORTANT:

- Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.
- Never remove the hard disk drive while the hard disk drive LED blinks in green (the hard disk drive executes reading or writing).

1. Remove the front bezel.
2. Push the lever of the hard disk to unlock the handle.



3. Hold the handle and hard disk to pull them off.



4. Install the dummy tray in an empty tray according to procedures described in "Installing 3.5-inch Hard Disk Drive".

   Make sure to install the dummy tray in the empty slot to improve the cooling effect within the device.

Replacing 3.5-inch Hard Disk Drive

Follow the procedure below to remove the failed hard disk. If the hard disk fails, it should be replaced with new device with the server powered-on.

IMPORTANT: Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options. You can replace disks during continuous operation.

Replacing the Hard Disk Drive

1. Locate the failed hard disk.

   When a hard disk fails, the DISK LED on the hard disk drive's handle illuminates green, while the other mirrored disk illuminates amber.

   The DISK Power/Access LED of the amber lit disk also illuminates amber.

   NOTE: Even if a hard disk fails, the DISK LEDs may not illuminate as described above. See "How to Locate Failed Disks" in Chapter 3 to identify failed disks.

2. Referencing the steps in "Removing the 3.5-inch Hard Disk Drive", remove the failed hard disk drive.

   No need to shutdown Windows Server 2003, Enterprise Edition.

3. Refer to the steps in "Installing the 3.5-inch Hard Disk Drive" to install a new hard disk drive.

   NOTES:

   - The hard disk to be installed for replacement must have the same specifications as its mirroring hard disk.
   - Use an unsigned hard disk to replace the failed one. If you use a signed disk, you need to restore the redundant configuration in the procedure of "How to Restore Redundant Configuration Manually" in User's Guide (Setup) that comes with your server.

4. Restore the redundant configuration.

   See "DISK OPERATIONS" in Chapter 3 and restore the redundant configuration.

PROCESSOR

Install a CPU in a CPU socket on the CPU module that is to be installed in the NEC Express5800/ft series.

The CPU module has four sockets for installing CPUs on it, and two CPUs are installed in standard configuration.

IMPORTANT: Ask your sales agent who has technical knowledge to install/remove/replace the CPU module or CPUs. NEC assumes no liability for damage to the server and components or adverse effect that arises from the installation/removal/replacement of a CPU module or a CPU by the user alone.

DIMM

Install DIMMs (Dual Inline Memory Module) in DIMM sockets on the CPU module that is to be installed in the NEC Express5800/ft series.

The CPU module has 12 sockets for installing DIMMs on it. Four 512MB DIMMs are installed as standard in DIMM socket Bank 0. (The DIMMs installed as standard can be replaced.)

IMPORTANT: Ask your sales agent who has technical knowledge to install/remove/replace DIMMs. NEC assumes no liability for damage to the server and components or adverse effect that arises from the installation/removal/replacement of a DIMM by the user alone.

NOTE: You can expand memory to a maximum of 12GB (1GB × 12 DIMMs).

PCI BOARD

PCI module and expansion PCI module can contain three PCI boards. The PCI slot #1 of the upper two PCI modules contains a factory-installed SMM board.

IMPORTANT: NEC recommends that you request a maintenance engineer of your service representative having the expert knowledge on the server to do the installation, removal, replacement, or setup of PCI module, expansion PCI module, and PCI board. NEC is not responsible for any server or component defects or bad influences resulting from the operation of the server subject to the installation or removal made by user.

SETUP OF OPTIONAL PCI BOARD

IMPORTANT:

- NEC recommends that you request a maintenance engineer of your service representative having the expert knowledge on the server to setup an option PCI board.
- To enable the fault-tolerant feature of the optional device, the identical PCI boards must be installed to the same slots in groups 1 and 2, respectively.
- An SMM board is already installed to PCI slot #1 of PCI module as standard configuration. This board may not be removed or replaced with any other board.
- For some optional PCI boards you may need to change the BIOS settings. Start the BIOS setup utility and select [Stratus] → [Monitoring Configuration] → [Boot Monitoring Time-out Period] to change the settings. For more details, see Chapter 4.
- Notes on installing option PCI board
  The PCI bus of expansion PCI module can operate at 66MHz (max). However, if an option PCI board operating only at 33MHz is installed in expansion PCI module, all PCI boards in the expansion PCI module operate at 33MHz.
  To make a PCI bus of expansion PCI module operate at 66MHz, install the PCI boards operating at 66MHz in every slot. If you want to connect an option PCI board operating at 33MHz, connect it to PCI module.

  Frequency of option PCI board
  – N8803-031F (Fiber Channel controller) 66MHz
  – N8804-001P1 (100BASE-TX Adapter Set) 33MHz
  – N8104-84 (1000BASE-SX Adapter) 66MHz
  – N8104-103 (1000BASE-T Adapter) 66MHz
  – N8890-005 (Disk Expansion Unit) controller 33MHz

N8804-001P1 100BASE-TX Adapter Set

Slots to install the board

IMPORTANT: Note the following about this product:

For LAN cable's connector, use the RJ-45 connector which is compliant with IEC8877 standard. Using a different connector may make it difficult to remove the connector.

N code	Name	PCI slot for PCI module						PCI slot for expansion PCI module						Remarks
		Group 1			Group 2			Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	#1	#2	#3	#1	#2	#3	
N8804-001P1	100BASE-TX adapter	–	√	√	–	√	√	√	√	√	√	√	√	

√: Can be installed. –: Cannot be installed.

IMPORTANT: The server can contain up to six sets of PCI boards: optional PCI board (N8804-001P1, N8104-84, or N8104-103) and internal LAN controller (100BASE-TX or 1000BASE-SX).

Installation of driver

The NEC Express5800/ft series duplicates one or two pairs of 100BASE-TX adapter sets (N8804-001P1) before using.

After installing Operating System, install the drivers in the following procedure and make dual settings of the PCI board.

NOTE: To perform this procedure, you have to log on the system as an Administrator or a member of the Administrators group.

1. Mount the N8804-001P1 100BASE-TX adapter to the slot with the same number in PCI module or expansion PCI module, and then start Windows Server 2003, Enterprise Edition.

   After starting Windows Server 2003, Enterprise Edition, the drivers are installed automatically.

   IMPORTANT: If the [Digital Signature Not Found] dialog box appears, click the [Yes] button.

2. Build a dual LAN configuration. (See "Set Dual LAN Configuration" in the separate volume of User's Guide (Setup).)

IMPORTANT:

- You can also select [Load Balancing] in step 3 in "Setting Dual LAN Configuration". In this case, [Team #1:Adaptive Load Balancing Mode] is added to Network Component Tree.
- Moreover, select [Stratus AA-U51500 10/100 Enet Adapter] instead of [Stratus emb-82559 10/100 Enet Adapter] in Steps 4 and 5.
- If you build a dual configuration by using two pairs of adapters in Step 5, add an adapter in the same way.

N8803-031F Fibre Channel Controller

Slots to install the board

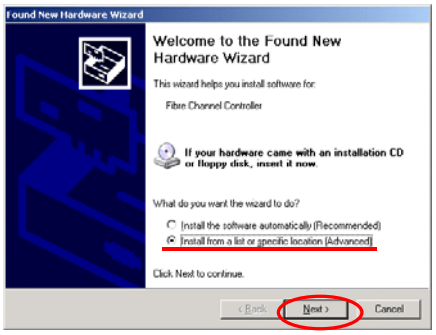
N code	Name	PCI slot for PCI module						PCI slot for expansion PCI module						Remarks
		Group 1			Group 2			Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	#1	#2	#3	#1	#2	#3	
N8803-031F	Fibre Channel controller	–	√	√	–	√	√	√	√	√	√	√	√	Each PCI module can contain one N8803-031F only. Each expansion PCI module can contain two N8803-031Fs.

√: Can be installed. –: Cannot be installed.

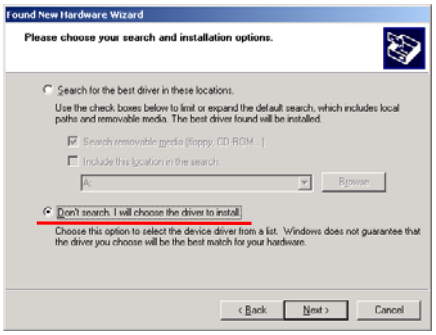
Installation of driver

1. When you start the system after installing N8803-031F Fibre Channel Controller, a wizard to detect new hardware will automatically start up.

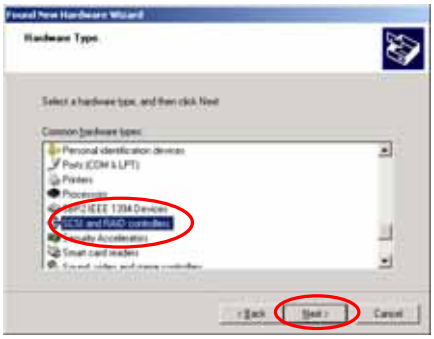
2. Select [Install from a list of specific location (Advanced)], and then click [Next].



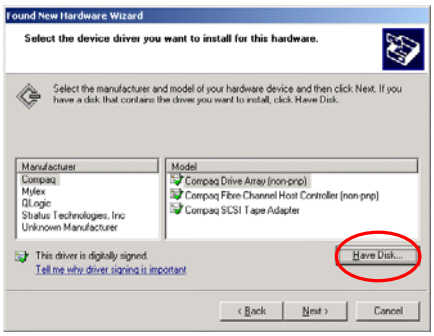
3. Select [Don’t search. I will choose the driver to install.], and then click [Next].



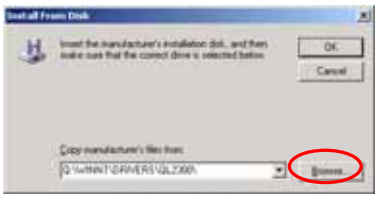
4. Select [SCSI and RAID controllers], and then click [Next].



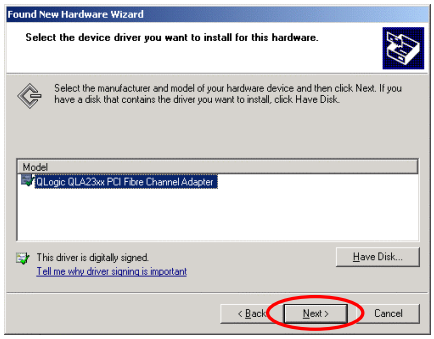
5. Do not select a driver listed on the model list. Click [Have Disk…].



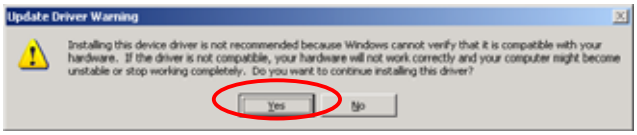
6. Insert NEC EXPRESSBUILDER into the CD-ROM drive, and click [Browse], specify the "CD-ROM drive:\WINNT\DRIVERS\QL2300" folder in the "Copy manufacture's files from:" column, and then click [OK].



7. Select [Qlogic QLA23xx PCI Fibre Channel Adapter] on model list, and then click [Next].

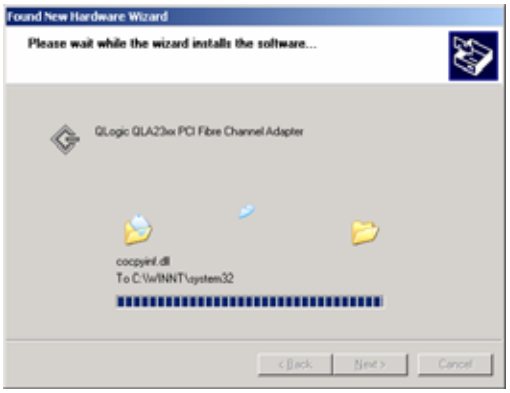


8. A warning message tells that you are about to update a driver. Click [Yes] to continue.



The driver will be installed.

* During the processing, the mouse cursor may not be moved for 10 to 20 seconds. Please wait.

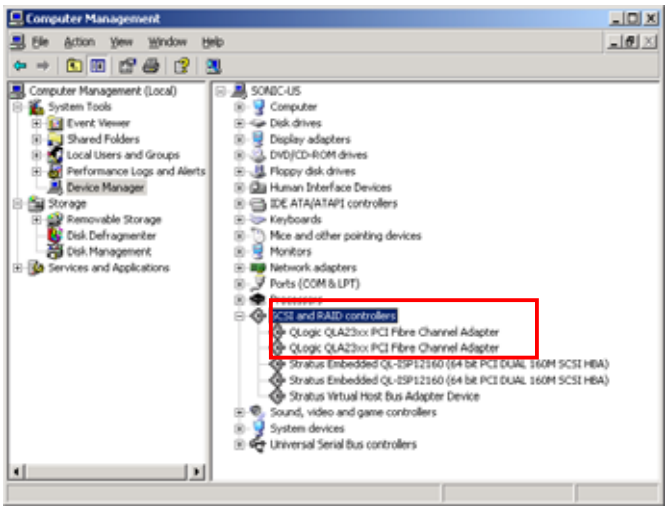


9. Click [Finish].

* This wizard will start up as many times as the installed Fibre Channel controllers. Repeat steps 1 to 9. .



10. Select [Control Panel] – [Administrative Tools]- [Computer Management] – [Device Manager], and confirm that there are as many [Qlogic QLA23xx PCI Fibre Channel Adapter]s as the installed Fibre Channel Controllers under [SCSI and RAID controllers].



IMPORTANT:

- StoragePathSavior is required to use N8803-031F.
- Insert Fibre Channel Controllers after the installation of OS is completed. Use Fibre Channel Controllers in pairs. Insert a Fibre Channel Controller into a slot in a PCI module and another Fibre Channel Controller into the slot at the same location in another PCI module.

How to confirm the status:

Use StoragePathSavior to check Fibre Channel Controller statuses, instead of viewing PCI board statuses.

N8104-84 1000BASE-SX Adapter

Consult your sales personnel for details when purchasing this hardware.

IMPORTANT: Note the following about this product:

- It is advisable to add this product to such environment that each system is used for a different purpose (ex. system line, maintenance, monitoring) and multiple accesses do not occur simultaneously.
- If there are multiple accesses, the processing power and transmission speed may be somewhat affected.

Slots to install the board

N code	Name	PCI slot for PCI module						PCI slot for expansion PCI module						Remarks
		Group 1			Group 2			Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	#1	#2	#3	#1	#2	#3	
N8104-84	1000BASE-SX Adapter	–	√	√	–	√	√	√	√	√	√	√	√	Each PCI module can contain one N8104-84 only. Each expansion PCI module can contain two N8104-84.

√: Can be installed. –: Cannot be installed.

IMPORTANT: The server can contain up to six sets of PCI boards: optional PCI board (N8804-001P1, N8104-84, or N8104-103) and internal LAN controller (100BASE-TX or 1000BASE-SX).

Installation of driver

The NEC Express5800/ft series uses a pair of N8104-84 boards in duplex mode.

After installing the OS, follow the steps below to install a driver before setting a dual configuration:

IMPORTANT: Please use the CD-ROM for NEC Express5800/ft series for installation. If you use the floppy disk provided with the network card, it will not operate properly. (PROSetII will not start.)

NOTE: To perform this procedure, you have to log on the system as an Administrator or a member of the Administrators group.

1. Mount the N8104-84 adapter to the slot with the same number in PCI module or expansion PCI module, and then start the Windows Server 2003, Enterprise Edition.

   After starting Windows Server 2003, Enterprise Edition, the drivers are installed automatically.

   IMPORTANT: If the [Digital Signature Not Found] dialog box appears, click the [Yes] button.

2. Build a dual LAN configuration. (See "Set Dual LAN Configuration" in the separate volume of the User's Guide (Setup).)

   IMPORTANT:

   - You can also select [Load Balancing] in step 3 in "Setting Dual LAN Configuration". In this case, [Team #1:Adaptive Load Balancing Mode] is added to Network Component Tree.
   - Moreover, select [Stratus AA-U57000 Fiber Gigabit Server Adapter] instead of [Stratus emb-82559 10/100 Enet Adapter] in Steps 4 and 5.

N8104-103 1000BASE-T Adapter

Consult your sales personnel for details when purchasing this hardware.

IMPORTANT: Note the following about this product:

- It is advisable to add this product to such environment that each system is used for a different purpose (ex. system line, maintenance, monitoring) and multiple accesses do not occur simultaneously.
- If there are multiple accesses, the processing power and transmission speed may be somewhat affected.
- For LAN cable's connector, use the RJ-45 connector which is compliant with IEC8877 standard. Using a different connector may make it difficult to remove the connector.

Slots to install the board

N code	Name	PCI slot for PCI module						PCI slot for expansion PCI module						Remarks
		Group 1			Group 2			Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	#1	#2	#3	#1	#2	#3	
N8104-103	1000BASE-T Adapter	–	√	√	–	√	√	√	√	√	√	√	√	Each PCI module can contain one board only. Each expansion PCI module can contain two boards.

√: Can be installed. –: Cannot be installed.

IMPORTANT: The server can contain up to six sets of PCI boards: optional PCI board (N8804-001P1, N8104-84, or N8104-103) and internal LAN controller (100BASE-TX or 1000BASE-SX).

Installation of driver

The NEC Express5800/ft series uses a pair of N8104-103 boards in duplex mode.

After installing the OS, follow the steps below to install a driver before setting a dual configuration:

IMPORTANT: Please use the CD-ROM for NEC Express5800/ft series for installation. If you use the floppy disk provided with the network card, it will not operate properly. (PROSetII will not start.)

NOTE: To perform this procedure, you have to log on the system as an Administrator or a member of the Administrators group.

1. Mount the N8104-103 adapter to the slot with the same number in PCI module or expansion PCI module, and then start the Windows Server 2003, Enterprise Edition.

   After starting Windows Server 2003, Enterprise Edition, the drivers are installed automatically.

   IMPORTANT: If the [Digital Signature Not Found] dialog box appears, click the [Yes] button.

2. Build a dual LAN configuration. (See "Set Dual LAN Configuration" in the separate volume of the User's Guide (Setup).)

   IMPORTANT:

   - You can also select [Load Balancing] in step 3 in "Set Dual LAN Configuration". In this case, [Team #1:Adaptive Load Balancing Mode] is added to Network Component Tree.
   - Moreover, select [NEC 8490XT Copper Gigabit Adapter] instead of [Stratus emb-82559 10/100 Enet Adapter] in Steps 4 and 5.

Supplement

Before using backup devices:

If any of following backup devices is used for internal SCSI connector of NEC Express5800/ft series, you may need to update your firmware for backup devices.

List of backup devices and firmware

Model #	NEC Model Name	Latest Firmware Revision
N8551-29F	Built-In AIT Auto Loader	L1nb
N8151-39F	Built-In DAT Auto Loader	L2n4
N8151-45F	Built-In DAT	02n9
N8151-46F	Built-In AIT	01nm
N8151-41AF	Built-In AIT	01nm

All tape devices need to update the firmware if the firmware revision is older than above.

IMPORTANT:

- Request a maintenance engineer of your service representative having the expert knowledge on the server to install or remove the backup devices and updating of firmware.
- If your backup device is a built-in type, you need to purchase a SCSI cable and device expansion unit separately. For external device, only SCSI cable is required additionally. Contact your service representative for details.

(This page is intentionally left blank.)

Appendix A

Specifications

Item		NEC Express5800/340Hb-R	
		N8800-047F	N8800-073F
Processor	Type	Intel® Xeon™ Processor MP	
	Clock/L3 cache	2.80GHz/2MB	3.00GHz/4MB
	Number of processors	2 (Each module has two processors in standard configuration.)	
		4 (Each module has four processors in maximum configuration.)	
Chipset		Server Set III GC-HE (400MHz)	
Memory	Standard	2GB (512MB × 4*)	
		* Each module has a DIMM in standard configuration.	
	Maximum	12GB (The standard DIMM must be replaced.)	
	Expansion unit	4 DIMMs per a bank (512MB × 4/1GB × 4)	
	Memory module	DDR200 SDRAM DIMM (Registered Type)	
	Error check	ECC	
Graphics (VRAM)		CT69000 (VRAM 2MB)	
Auxiliary input device	Floppy disk (standard)	3.5-inch drive × 1 (USB)	
	Hard disk (standard)	36.2GB *1 (18.1GB× 2) * The user area is reduced to a half of the physical capacity due to software mirroring.	
	Hard disk (maximum)	879.0GB* (146.5GB × 6) * The user area is reduced to a half of the physical capacity due to software mirroring.	
	CD-ROM (standard)	ATAPI interface × 1 (Load on tray type, x24 speed) A ready drive is indicated by POWER LED of that PCI module.	
File bay	5.25 inch	None	
	3.5 inch	6 slots	
Additional slot	PCI	12 slots (2 slots are used for SMM board.)	
LAN interface		1000BASE-T/100BASE-TX/10BASE-T (2 ports); 100BASE-TX/10BASE-T (2 ports)	
External interface	USB	4-pin (2 ports) 2 ports are used by keyboard and external USB FDD.	
	SCSI	VHDCI 68-pin connector (2 ports)	
	Serial	D-sub 9-pin (2 ports) For maintenance purpose only	
	Network	RJ-45 (2 ports)	
	Display	MINI D-sub 15-pin (1 port)	
Cabinet design		Rack-mount type (See Note below.)	
External dimensions		480 (width) × 445 (height) × 790 (depth) mm	
Weight		120 kg	
Power supply		100 to 120 VAC ±10%, 200 to 240 VAC ±10%, 50/60 Hz ±1 Hz	
Power consumption		1895 VA, 1800 W	
Environmental requirements	In operation	Temperature 10 to 35°C Humidity 20 to 80% RH (non-condensing)	
	In storage	Temperature -10 to 55°C Humidity 20 to 80% RH (non-condensing)	

*1: A factory-installed 18.1GB hard disk drive in slot #1 cannot be replaced. Use the factory-set configuration. Modifications to the hard disk drive configuration may cause trouble.
*2: A space of 2U is required below the server when installing the server in the rack.

Appendix B

IRQ and I/O Port Address

The factory-set interrupt requests and I/O port addresses are listed below.

Interrupt Request

The factory-set IRQs are assigned as follows:

IRQ	Device
IRQ2	System timer
IRQ3	Communication port (COM2)
IRQ4	Communication port (COM1)
IRQ11	Stratus Fault Tolerant Virtual 69000 Video
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ19	Stratus emb-82559 10/100 Enet Adapter
IRQ32	Microsoft ACPI-Compliant System
IRQ32	Stratus Fault Tolerant PCI to PCI bridge
IRQ32	Stratus Fault Tolerant PCI to PCI bridge
IRQ32	Stratus Fault Tolerant PCI to PCI bridge
IRQ32	Stratus Fault Tolerant PCI to PCI bridge
IRQ35	Stratus AA-U46200 ftServer Access Adapter
IRQ35	ServerWorks (RCC) PCI to USB Open Host Controller
IRQ37	Stratus Embedded QL-ISP12160 (64bit PCI DUAL 160M SCSI HBA)
IRQ38	Stratus AA-U52100 (64bit PCI DUAL 160M SCSI HBA)
IRQ39	Stratus BMC Device
IRQ41	Stratus AA-U46200 ftServer Access Adapter
IRQ41	ServerWorks (RCC) PCI to USB Open Host Controller
IRQ42	Stratus Embedded QL-ISP12160 (64bit PCI DUAL 160M SCSI HBA)
IRQ43	Stratus AA-U52100 (64bit PCI DUAL 160M SCSI HBA)
IRQ43	Stratus emb-82544GC Copper Gigabit Adapter
IRQ45	Stratus BMC Device
IRQ47	Stratus emb-82559 10/100 Enet Adapter #2

I/O Port Address

The factory-set I/O port addresses for the server are assigned as follows:

Address	Device
0x00000000 – 0x00000CF7	PCI bus
0x00000000 – 0x00000CF7	DMA controller
0x00000000 – 0x00000CF7	System CMOS / Real-time clock
0x00000010 – 0x0000001F	Motherboard resource
0x00000020 – 0x00000021	Programmable interrupt controller
0x00000024 – 0x00000025	Motherboard resource
0x00000028 – 0x00000029	Motherboard resource
0x0000002C – 0x0000002D	Motherboard resource
0x0000002E – 0x0000002F	Motherboard resource
0x00000038 – 0x00000039	Motherboard resource
0x0000003C – 0x0000003D	Motherboard resource
0x00000040 – 0x00000043	System timer
0x00000050 – 0x00000053	Motherboard resource
0x00000060 – 0x00000060	Motherboard resource
0x00000061 – 0x00000061	System speaker
0x00000064 – 0x00000064	Motherboard resource
0x00000074 – 0x00000077	Motherboard resource
0x00000074 – 0x00000077	Motherboard resource
0x00000080 – 0x00000080	Motherboard resource
0x00000081 – 0x0000008F	DMA controller
0x00000090 – 0x0000009F	Motherboard resource
0x00000092 – 0x00000092	Motherboard resource
0x000000A0 – 0x000000A1	Programmable interrupt controller
0x000000A4 – 0x000000A5	Motherboard resource
0x000000A8 – 0x000000A9	Motherboard resource
0x000000A8 – 0x000000A9	Motherboard resource
0x000000AC – 0x000000AD	Motherboard resource
0x000000B0 – 0x000000B5	Motherboard resource
0x000000B2 – 0x000000B2	Motherboard resource
0x000000B8 – 0x000000B9	Motherboard resource
0x000000BC – 0x000000BD	Motherboard resource
0x000000C0 – 0x000000DF	DMA controller
0x000000E4 – 0x000000E6	Stratus BMC Device
0x000000F0 – 0x000000FF	Numeric data processor
0x00000170 – 0x00000177	Secondary IDE channel
0x000001F0 – 0x000001F7	Primary IDE channel
0x00000274 – 0x00000277	ISAPNP read data port
0x00000279 – 0x00000279	ISAPNP read data port
0x000002F8 – 0x000002FF	Communication port (COM2)
0x00000376 – 0x00000376	Secondary IDE channel
0x000003B0 – 0x000003BB	Stratus Fault Tolerant PCI to PCI bridge
0x000003B0 – 0x000003BB	DEC 21150 PCI to PCI bridge
0x000003B0 – 0x000003BB	VGA Display Controller.
0x000003BC – 0x000003BD	Stratus Virtual Video

Address	Device
0x000003C0 – 0x000003DF	Stratus Fault Tolerant PCI to PCI bridge
0x000003C0 – 0x000003DF	VGA Display Controller.
0x000003F6 – 0x000003F6	Primary IDE channel
0x000003F8 – 0x000003FF	Communication port (COM1)
0x0000040B – 0x0000040B	DMA controller
0x000004D0 – 0x000004D1	Programmable interrupt controller
0x000004D6 – 0x000004D6	DMA controller
0x00000500 – 0x0000053F	Motherboard resource
0x00000540 – 0x0000058F	Motherboard resource
0x00000A79 – 0x00000A79	ISAPNP read data port
0x00000C00 – 0x00000C01	Programmable interrupt controller
0x00000C06 – 0x00000C06	Motherboard resource
0x00000C07 – 0x00000C07	Motherboard resource
0x00000C08 – 0x00000C08	Motherboard resource
0x00000C14 – 0x00000C14	Motherboard resource
0x00000C4A – 0x00000C4A	Motherboard resource
0x00000C50 – 0x00000C50	Motherboard resource
0x00000C51 – 0x00000C51	Motherboard resource
0x00000C52 – 0x00000C52	Motherboard resource
0x00000C6C – 0x00000C6C	Motherboard resource
0x00000C6F – 0x00000C6F	Motherboard resource
0x00000CA2 – 0x00000CA2	Stratus BMC Device
0x00000CA3 – 0x00000CA3	Stratus BMC Device
0x00000CA4 – 0x00000CA7	Stratus BMC Device
0x00000CD6 – 0x00000CD6	Motherboard resource
0x00000CD7 – 0x00000CD7	Motherboard resource
0x00000D00 – 0x00000FFF	PCI bus
0x00000F40 – 0x00000F4F	Standard dual-channel PCI IDE controller
0x00000F40 – 0x00000F4F	Stratus Fault Tolerant IDE
0x00000F40 – 0x00000F4F	Stratus Fault Tolerant IDE
0x00006000 – 0x0000FFFF	PCI bus
0x00006000 – 0x0000FFFF	Stratus Fault Tolerant PCI to PCI bridge
0x00007000 – 0x000070FF	Stratus AA-U52100 (64bit PCI DUAL 160M SCSI HBA)
0x00008000 – 0x0000801F	Stratus emb-82544GC Copper Gigabit Adapter #2
0x00008400 – 0x000084FF	Stratus Embedded QL-ISP12160 (64bit PCI DUAL 160M SCSI HBA)
0x00008800 – 0x0000883F	Stratus emb-82559 10/100 Enet Adapter #2
0x00009000 – 0x0000BFFF	Stratus Fault Tolerant PCI to PCI bridge
0x0000A000 – 0x0000A0FF	Stratus AA-U52100 (64bit PCI DUAL 160M SCSI HBA)
0x0000B000 – 0x0000B01F	Stratus emb-82544GC Copper Gigabit Adapter
0x0000B400 – 0x0000B4FF	Stratus Embedded QL-ISP12160 (64bit PCI DUAL 160M SCSI HBA)
0x0000B800 – 0x0000B83F	Stratus emb-82559 10/100 Enet Adapter
0x0000C000 – 0x0000FFFF	PCI bus
0x0000C000 – 0x0000FFFF	Stratus Fault Tolerant PCI to PCI bridge
0x0000E000 – 0x0000FFFF	Stratus Fault Tolerant PCI to PCI bridge

(This page is intentionally left blank.)